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J. RUTGERS
THE SEXUAL LIFE.

THE SEXUAL LIFE

IN ITS BIOLOGICAL SIGNIFICANCE
AS A DOMINANT FACTOR
OF VITALITY IN MAN AND WOMAN,
AND IN PLANTS
AND ANIMALS.

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FOREWORD.

This book is not a treatise on Sexual Hygiene or Sexual Ethics. It aims primarily at establishing a firm basis for both, by means of a clearer insight into the nature of the sexual life.

All too seldom have attempts been made to fathom the profundities of the sexual life and to forge every link in the chain of causality from the minutest physical processes to the sublimest idealism of passion. Only by so doing can we fully elucidate this central problem of our existence and learn to control its impulses.

That nobody had, so far, properly attempted to do this was due not only to prudery but also to the fact that sexual phenomena run so little parallel with the other phenomena of growth, that even a scientific study of the subject is beset with countless, almost insuperable, difficulties.

We shall now make an attempt to allocate to this most important function of cellular life its proper place in the realm of Biology, and so open up many new vistas.

The magic key will be furnished by the comparative method, which has illumined so many other problems. We shall always endeavour to survey this field broadly, noting the working of the function in man and woman, and in plants and animals. But since it is also to some extent a secretory function, we shall continue its study by comparing it with our other secretory functions. In this way, many points will be further elucidated.

By adopting this method it will be made evident that though the sexual function shows many points of resemblance to other secretory processes, yet the sexual life is fundamentally based on a new formation of unicellular organisms, thus diverging essentially from normal vegetative development. It is this essential difference between sexual development and the ordinary vegetative development that produces those great anatomical and physiological antagonisms, which we experience psychically as ethical conflicts.

The new-formation of single cells is the most important point in the sexual life, and this special variety of new-formation must be studied in comparison with other, better known types of new-formation, and the sexual divergence from vegetative growth in comparison with other divergences from normal growth. This we shall do specially in chapters 5 and 40. Only by such a systematic use of the comparative method can we find a solution to much that would otherwise remain obscure.

To investigate the interdependence of *all* phenomena is the greatest of the tasks of Science. In studying any subject it is necessary to subdivide it, and to consider each subdivision separately. Later it may be necessary to collate the findings and re-classify them, and perhaps to revise the nomenclature which has previously been generally accepted while studying the subdivisions. In this regard I shall, in these pages, make a few suggestions which I think will ensure a clearer understanding and a greater facility for surveying the subject as a whole.

Thus I shall extend the use of the word tumour to analogous but non-pathological formations, and I shall not designate *internal* secretion as *glandular* secretion. Of course, in a task like this one encounters many time-honoured errors and established prejudices. To overcome these obstacles is in itself worth while. Such a study will prove most valuable for one's own personal education, and quite indispensable for doctors, clergymen, and teachers, who desire to give guidance to the masses in the more intimate problems of life. Their attempts have hitherto almost always failed because they themselves were insufficiently instructed in the subject. Even in medical text-books the sexual passion with its intricate problems has been to this day almost entirely neglected, and yet every adult feels only too keenly in his own soul that in this sphere are found the most important mainsprings of conduct, determining happiness or misery, sickness or health. We doctors have to pick up in our practice all that should have been taught us at the medical schools. The material on which I base my observations I collected as a family physician in a large city (Rotterdam) but it was not until I had given up my practice that I found sufficient leisure to elaborate it. I have

endeavoured to present it in a form which can be understood by educated laymen as well. How many unmarried people are there whose love-life has been unsatisfactory, how many married people whose marriages have fallen short of the ideal, how many parents who are anxious to bring up their children wisely, but do not know how.

In each section it will be easy to distinguish those parts which are important only for experts, from those which have been included for the benefit of the general reader. In particular, the early part of the book had to be kept as elementary as possible in order to make it easily comprehensible to the general reader, for whose benefit a small glossary of medical words has been appended. One of the greatest triumphs of modern democracy is that all problems which are significant for conduct and happiness in life are becoming more and more the concern of all, instead of remaining limited to savants.

This endeavour to make myself comprehensible to lay people has other advantages as well, for often it is only when we try to avoid the traditional technical terms that we feel the need for a clearer proof of our theories.

Up to the present, scientific students of the sexual life have always gone astray because they have considered procreation as its final goal, and have looked on sexual pleasure as a mere by-product, whereas in reality it is often the other way about.

In order to avoid this cardinal error, and to evaluate correctly sexual pleasure in its biological significance, I have in this book taken the male, rather than the female, sexual life as my starting-point, especially because, owing to the more superficial situation of the sexual organs in man, the physical aspects of his sexual life are more easily observed, while in the female the connection between psychical feelings and physical urges is much less apparent, and often scarcely perceived by herself. For woman, love is a veiled secret; for man, a naked truth. As an object for study I prefer to begin with the naked truth.

Woman will then be better able to ascertain for herself and to describe, how she feels the life-impulses.

Lochem, Holland, 1922.

Dr. J. Rutgers.

FOREWORD TO THE ENGLISH EDITION.

In introducing this book to the English public I am at a disadvantage, in that the manner of publication compels me to write a foreword at a time when I have completed the translation of but one quarter of the book and indeed read but little more of it. The original German edition reached me only section by section, and pressure of professional work, together with lecturing and my own literary work, has prevented me from reading it all as yet.

For this reason it may be wise to explain that the translator is not necessarily in agreement with all the opinions expressed by the author, though so far as I have read I have not found any important ground for disagreement.

Dr. Rutgers is known in England only, or chiefly, as one of the pioneers and leaders of the Dutch Birth-Control movement, to which we British and American advocates of Birth-Control owe so much. But this volume shows him to be a profound thinker, very widely read in the literature of his subject, of vast experience in the practice of his profession, possessed of a strong critical faculty and an unusual capacity for independent thinking. This last attribute is perhaps the most characteristic and the most valuable. He accepts nothing simply because it is customarily accepted. He examines it for himself, weighs the *pros* and *cons* impartially, and either makes his decision in accordance with the weight of evidence, or if the latter is insufficiently conclusive leaves the decision until some fresh evidence shall have been obtained. His originality is delightful, and even where one may not agree in every detail with his conclusions, one feels that one has been led to see things from a new viewpoint.

I shall write no more here, but reserve any further remarks for an afterword at the end of the last section.

90 Harley Street, London.

1 May 1923

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I.

THE FORMATION OF THE ORGANS.

ANATOMICAL SECTION.

1. *The two sources of our Sexual life.*

Most errors arise not from absolute ignorance but from an inexact conception of just those things which one thinks one knows best. This is especially true in the sphere of sex. The simplest and clearest possible presentation of the underlying physical phenomena should therefore always be given first.

The physical foundation and starting point of our whole sexual life, with all its weal and woe, with all its profound agitations and emotions, are to be found in two minute organs, two small tumours, which in the adult body furnish the reproductive cells. These are, as everyone knows, in the male the two *testes* or *testicles*, hard and round, as big as a finger-joint, which produce the sperm-cells; in the female the two *ovaries*, in shape and size like a dried plum, which furnish the egg-cells.

These two types of organs are often grouped together under the name of *Gonads*, or *Sexual Glands*. But this nomenclature is bound up with so many misconceptions that we shall deal with it at length in the next chapter. We shall not consider the anatomical structure of the testicle till the sixth chapter, as until then we shall be concerned in defining the special significance of these organs from the embryological and chemical point of view. Thus we shall clearly show how these organs come to play such an important part in adult life.

It is essentially the testes or ovaries, as the case may be which determine the sexual difference, because they produce the reproductive-cells and also because of the specific chemical constituents which they pour into the blood stream. Sometimes a child is born with imperfect and rudimentary external genitals, so that it is impossible to decide whether it should be registered as male or female. It is nearly always possible to decide this question after death, according to whether post-mortem examination discloses testicles with sperm-cells or ovaries with egg-cells. Most often it is found to be an imperfectly developed male, in whom the very rudimentary penis and shortened urethra were mistaken for a clitoris and female urethra, and the empty folds of the scrotum for labia majora. This explains all those so-called miracles in the middle ages, when girls were alleged to be suddenly changed into boys.

We should say that it became evident at puberty that these individuals, previously mistaken for girls, were really boys.

The most extraordinary thing about the testicles is that they migrate from the abdominal cavity where they are developed, in order to form a special outgrowth at the bottom of the belly. The testicles in man, like the ovaries in woman, are originally developed fairly high up in the abdominal cavity on either side of the lumbar vertebrae. But in the higher mammals and in man the testicles leave their original situation before birth and move lower and lower, like a hernia, forcing a passage right through the muscle fibres of the abdominal wall and pushing the peritoneum before them. They never break through the skin, but at last, approaching each other in the groins, they drop into two folds of the skin at the lower part of the body between the thighs. These folds are a continuation of the gluteal folds, and analogous to the folds which in the female form the *labia majora*. In the male, however, they grow together to form a single sac called the *scrotum* containing the testicles, divided by an internal septum. The raphé in the median line of the body, where the two halves of the scrotum meet, is clearly seen even in the adult.

The two testicles are quite palpable in the scrotum, and so also is the *sperm-duct* (seminal canal) on each side. The latter feels like a thin hard cord. Fortunately, the two testicles hardly ever hang at the same level, otherwise they would often be squeezed together and cause pain. This is easily understood, as they had to accommodate themselves to each other even *in utero*.

Anteriorly, i. e., seen from in front, the scrotum is partially covered by a continuation of the urinary passage the copulatory organ (the *membrum virile* or penis)*.

* Since the testes in their descent emerge *above* the pubic bone while the urinary canal emerges *below* it, one would expect the testes to rest in front of the penis, and form a scrotum there, but this is not so. For before birth the foetus lies curled up in the womb and the penis as well as the two thighs lie in contact with the anterior abdominal wall. When therefore the testes pass through the abdominal wall they also pass by the penis and protrude at the lower pole of the body, between penis and anus. Thus penis and testes grow past each other. They have already a tendency to cross each other since they grow from opposite directions. The urethra comes from below the pubic bone in a forward and upward direction while the testes, just under the skin, travel from above the pubic bone in a downward direction.

In girls, the ovaries migrate downwards a little before birth and take up a position about the level of the upper margin of the pubic bone. In rare pathological cases they appear in the groin under the skin like a hernia and in very rare cases they may sink into the labia majora, just as in the male the testicles into the analogous scrotum.

As we shall see later, the kidneys also which are embryonally closely related to the testes, sometimes become displaced. We then refer to them as *floating kidneys*. They are, however, too large ever to pass out of the abdominal cavity.

There is no doubt that the way in which a testicle changes its position bears a great resemblance to a pathological process e. g. the formation of an inguinal hernia, or more correctly a bilateral scrotal hernia. A hernia or rupture is generally a small loop of intestine or some other small viscus, which, not content with its position in the abdomen, yields to the abdominal pressure and tries to escape towards the exterior, always invaginating the peritoneum and never piercing the skin. If such a protrusion is found in the region of the navel it is called *umbilical hernia*, if in the fold between abdomen and thigh (the region known as the groin) it is called an *inguinal hernia*. In the male it has, in this case, simply followed the path prepared for it by the descent of the testicle before birth.

Such an inguinal hernia may continue its migration even lower, exactly like a testicle, until in the female it reaches the labium majus or in the male forms a scrotal hernia in the corresponding half of the scrotum. In elderly men in particular, if it once reaches the scrotum and nothing is done to correct it, loop after loop of intestine may descend until a mass as big as a child's head consisting of nearly all the intestine comes to lie in the scrotum. This is surely a very unpleasant sequel to the descent of the testis!

Fortunately, it does not generally reach this stage. Indeed, the greatest danger occurs early when the rupture has just passed through the fibres of the abdominal muscles which prevent its return and, gripping the pedicle of the hernia, interfere with its blood and nerve supply. The patient then experiences a dull pain, a feeling of anxiety, giddiness and nausea, a collapse like approaching death, without knowing exactly what is the matter. It must therefore be considered

fortunate that the abdominal muscles are thin and yielding in the inguinal region, otherwise this fatal event would occur much oftener, unless the muscles were so taut that nothing could slip through at all.

Even if the descent of the testicles was originally a pathological process, it must be admitted that this migration of both testicles to the exterior of the body is to be considered as a vitally important event in the history of evolution. Thus, these organs at once become far more accessible than previously to external and voluntary stimulation. This intensifies the male sexual life very considerably and brings it more completely into the realm of consciousness. The increased vulnerability and the possibilities of subsequent hernia which inevitably accompanied this change would certainly count little against the gigantic advantage. This is shown most clearly by the fact that in the survival of the fittest the descended testis has gained the victory, and that the higher orders with their increased sexuality have reached a higher stage of development.

Occasionally, even in man one finds cases where the testes have descended only partially or not at all. In the former case they may be palpated in the inguinal region, the scrotum remaining empty on the side affected. This does not matter as long as strangulation does not occur; but if it does, it has the same serious consequences as in hernia.

For instance, I had a patient once, a young man aged eighteen, of good family, who had to be sent to a lunatic asylum for the second time. He was so violent that it took four men to restrain him. I learned from his family that his delusions were at first of an erotic nature, and I remembered having been consulted by him some time previously, because one of his testicles could be felt in the groin, though it caused him no inconvenience. I therefore suggested that the testicle affected should be removed before he was sent to the asylum. The operation was performed under chloroform without any difficulty and his mental derangement was cured at once. He never showed the slightest trace of nervous trouble afterwards. passed an examination with distinction, and later married happily. So we see how a couple of tiny organs may decide the happiness or misery of our life.

2. Are we dealing with glands or tumours?

The two kinds of organs hitherto discussed — testicles and ovaries — are frequently grouped together under the name of Sex-Glands. But are they really glands? This question is not an idle speculation; it concerns the very foundation of the sexual life.

We shall never have a proper insight into the nature of the sexual life, as long as we consider this function merely as a glandular secretion. To do this, is to overlook the most important point. Sexual life is something *sui generis*. It is the originating of new life, going hand in hand with secretion. In the male the function of secretion, in the woman the creation of new life is predominant.

A tumor is a cell-conglomeration that, because it is strictly localised, must protrude more or less and will at last become a lump, a swelling, a tumour, either malignant or benign according as to whether it is dangerous to life or not. Under certain circumstances such a tumour may raise itself from its base as a pedunculated tumour; it sometimes even goes further and becomes entirely detached.*

I have discussed tumour-formation rather fully here because the first *mise-en-scène* of the sexual life is a kind of tumour-formation — the first modification of growth in contrast with

* e. g. In pedunculated tumours on the surface of the body, increase in growth may make the stalk so delicate that at last it breaks with the slightest cause and the tumour is thus cast off. But this may be partly attributed to external forces. In the abdominal cavity, however, *appendices epiploicae* which were once pedunculated have been found entirely detached, and in the uterus subserous *myomas* have been found detached. Then, too, there are the *loose bodies* found in joints, which have certainly originated as pedunculated tumours of joint capsule.

The foetus while it is joined by the umbilical cord to the *placenta* (or afterbirth) cannot be considered as a tumour growing from the mother. On the contrary, the placenta is a tumour growing from the foetus which originally floated free in the uterus. But, as often happens, this tumour invades the neighbouring organ, which in this case is the uterine wall. Immediately after birth the long thin stalk, the umbilical cord, is broken, either by the scissors in human beings, or by tearing and biting as in animals, so that the tumour is cast off.

ordinary vegetative growth. We shall pursue this point in the next chapter, and refer to it fully in chapter 40.

It is far more difficult to get a proper conception of what is meant by a *gland*. Much misunderstanding may occur, because the meaning of this word has gradually changed, as we can trace in the common speech. In common parlance the word "gland" suggests swollen lymphatic glands as they are so often seen in the neck of young persons, generally in connection with running sores on the face or scalp. In this case there is no glandular secretion at all. There is a primary infection of the skin giving rise to a secondary infection of the neighbouring lymph-follicles which then protrude as small *glands* (*glandula*, = a small acorn). It was formerly thought that the *glands* were the primary trouble and that the running sores were caused by the running matter which they secreted.*

Thus the word *glandula* or *gland*, which originally signified a small protuberance, gradually acquired the special significance of a secretory organ. Now, however, that we are better informed on this point, and the use of the word gland is restricted to secretory organs, we should no longer speak of lymph-*glands* but rather of lymph-*follicles* or lymph-*nodes* and we should use the word *gland* only for those organs which structurally and functionally are secretory.

Thus we have in our skin and in our mucous membranes innumerable tiny glands which supply sebum, mucus, sweat, and other substances, according to whether their cells undergo fatty or mucous degeneration or secrete an aqueous solution of ordinary or of special waste products. Such a simple gland which is really only an invagination of the skin or mucous membrane, consists of a microscopically small tube, the inner surface of which is provided with glandular cells while the tube itself functions as a duct. The waste products of these glandular cells are therefore conducted to the surface of the body or of the alimentary tract, without being mixed with the blood circulation.**

* People used to fear that if they treated the running sores the disease would "strike inwards".

** In plants, most glandular cells open immediately on the surface, so that a duct is unnecessary. These are the epithelial cells, hairs, scales, etc., which secrete honey, ethereal oils or other waste products although they are not situated in invaginations.

Besides these microscopic glands which consist of a single small tube, there are in the body larger glands composed of countless numbers of such small tubes, the ducts of which gradually converge like streams to a large river, till they finally empty on to the surface of the body or of the alimentary canal like the simple tubular glands. Thus we have two *tear*-glands, several *salivary*-glands and two *mammary*-glands. In the male the latter are usually, but not invariably, rudimentary. The largest gland is the *liver*. The gall from the liver and the secretion from the *pancreas* empty together into the alimentary canal a little way below the stomach, and have a great influence on digestion. For the urinary secretion we have two *kidneys*.

In many of these large glands the duct has a lateral dilatation or reservoir just near its mouth, where the secretion accumulates instead of trickling out continuously. It is placed laterally, because otherwise there would be a changing pressure which might affect the secretory function. Thus the two *tear*-glands have each a small *tear-sac* before the tears reach the conjunctival cavity on their way out through the nose. The liver is provided with the *gall-bladder*, and the two kidneys with the single urinary bladder. So in all these cases it is possible to collect a quantity of fluid which can be ejected forcibly by muscular contraction. The latter sometimes happens with milk and with salivary secretion too, although here the duct is only slightly dilated and has very few muscle fibres.

Besides the soluble constituents, e. g. the waste products of the glandular cells, the fluid secretion of all glands contains in addition less soluble products, such as mucus or fat, which are degeneration products of the respective gland cells. Microscopically, one can also find dead and disintegrated cells floating in the fluid, which are derived from the inner surface of the duct, for our epidermis and our mucous membranes are constantly casting off dead or damaged cell-fragments. Now there are two special organs in the male: the two *testicles* — which though constructed like a typical gland do not at first secrete anything at all. Only at puberty do they begin to secrete countless fresh vigorous young cells — the male *sperm-cells* — mixed with a lot of mucus, just as if it were an ordinary glandular secretion.

This production of fresh vigorous young cells which will give rise to the next generation does not fit into our conception of a glandular secretion. For the substances secreted by a gland are its waste products, mixed perhaps with dead and disintegrated cell-fragments. A local production of large numbers of cells of this sort is elsewhere found only in new growths, tumours and similar pathological conditions (vide chapter 5) above all, in metastases but never in normal glandular functioning. Only the manner in which these cells are voided conforms to the glandular type. It will be shown in the next chapter that the testicle arises from the coalescence of an epithelial tumour with the duct system of an embryonic gland, while in the female the ovary represents the epithelial tumour only. In this case, the duct of a rudimentary gland, at a slight distance from it, serves as its outlet. In both cases it is a double organ. In the male, the glandular apparatus is paramount, in the female the tumour. This corresponds with the observation at the beginning of this chapter that in the male, the secretory function, and in the female, that of new growth, preponderates. So we see, that the custom of grouping testes and ovaries together under the term *sexual glands*, arises from a misconception which could only spring from a one-sided view, derived solely from the consideration of the function in the male. If the female organism had been carefully considered at the same time, this mistake could never have been made. And if it is proposed, as it has been recently, to call testes and ovaries *glands*, because they supply other important organochemical substances besides the germ cells, then all the organs of the body could be called glands, for they all have their own waste products.

If one wants a single term for ovaries and testes, one should call them *gonads* or *reproductive-tumours* because at a later period of their existence they supply the reproductive cells. One can certainly not speak of *glands* in this connection.

3. *The embryology of sexual differentiation.*

After these preliminary attempts to find our bearings, we shall start from the very origin and consider the fertilised ovum as it lies in the uterus, in its most primitive embryonic condition, before it is attached to the uterine wall. At this period it derives a scanty nourishment from the maternal serum in which it floats. Not till later, at the end of the first three months, when the original store of energy possessed by the fertilised ovum is coming to an end, do a few blood-vessels grow from the embryo towards the uterine wall, where they ramify to form the placenta (afterbirth). Through this, by osmosis, the blood of the embryo obtains nourishment from, and gives up its waste products to the blood of the mother. The offspring is now no longer known as the embryo but as the *foetus* and lives as a parasite on the maternal circulation until its birth. Thereafter it has an independent existence, feeds on other organisms, and grows, at first swiftly, but with gradually decreasing energy until puberty.

The first or embryonic stage is a very primitive one. The gill-clefts are beginning to form the face. The whole body is still open in the medial line anteriorly. Two *primordial kidneys* subserve the scanty urinary function. Four small eminences appear about the third week, which will soon develop into legs and arms. All external evidence of sexual differentiation is still lacking.

At this stage one cannot discern even any *internal* sexual differentiation. Development proceeds quite systematically. Every process of growth takes place by normal cell division and all the different tissues develop *pari passu* without mutual interference. When the embryo has developed to a certain point and the primordial kidney (*Wolffian body*) is completely formed, a new phenomenon occurs. There now appears at each side of the lumbar column, a thickening of the epithelial layer which lines the interior of the body cavity. These gradually develop as small growths or tumours. They are the first rudiments of the bilateral reproductive tumours. The first evidence of this change to be seen under the microscope is a tendency of the epithelial cells and the underlying connective tissue to

invade each other. This increases until the epithelial cells become separated into small aggregations surrounded by connective tissue. Such a mutual invasion of two heterogeneous types of tissue reminds us strongly of the microscopic appearance of certain pathological growths or tumours* which can even invade neighbouring organs, so that the patient's life may be endangered.

Here, too, the segregation of these cell-masses has most far-reaching consequences — it is the beginning of the whole sexual life. In the ordinary course of events these cells would have become differentiated to form a surface epithelium, and, when old and degenerated, would have been cast off as dead cells. Now, however, that they are buried deep in other tissues they retain their original embryonic characters, no matter how much they are multiplied by cell-division. When at last the time of their final cell division comes, they will reach the surface as young cells.

These isolated masses of epithelial cells may develop further in one of two different ways. This is the starting point of a divergence which becomes an actual sexual differentiation at puberty. In some embryos there is always one cell in each mass which attains a larger size and will eventually develop into a mature *egg-cell*. Such an embryo will eventually become a female. The formation of such egg-cells rudiments continues until the end of the second year of extra-uterine life.

In other embryos**, however, i. e. in those which are to

* This abnormal tissue-formation occurs in a place, which as shall see in Chapter 41, is especially predisposed to such deformity. It is, therefore, very surprising to observe a similar phenomenon at such an early period as in the embryo. Although this tumour formation does not occur at a period of life which is late from the absolute point of view, it does occur at that point of the embryonic stage when the growth-energy of the fertilised egg-cell, which was at first so tremendous, has begun to decline, and would soon be exhausted, only that at the right moment the maternal circulation comes to its aid. The embryonic stage now ends and the foetal stage begins.

** While many pathological and many malignant tumours are *polymorphous*, because they have developed from very diverse tissues and organs, the reproductive tumour is only *dimorphous* and becomes associated either with a *Wolffian body* or with the duct of a rudimentary

become males, all the cells of each aggregation undergo multiplication and form a large number of tiny cells which become arranged close together round a small central cavity. These tumours continue to grow and come to invade two neighbouring glandular organs which are situated on either side of the vertebral column. The latter are the primordial kidneys (Wolffian bodies) which by this time are functioning. They are invaded, and the tiny cavities, which have meantime elongated to form tubules, join with the microscopic tubules of the primordial kidney. The two elements now form a compound organ known henceforward as the *testis*.

Later on, in the adult male, only the efferent sexual canal is derived from the Wolffian body, while the reproductive cells are furnished by the other part of the testis which corresponds to the original reproductive tumour. The two Wolffian bodies cease to function as secretors of urine and are replaced by two new, active, fully developed kidneys. But even in the adult testis, the typical glandular structure remains so obvious, that at first sight, one would think it was only a typical gland.

So on each side the epithelial protuberance develops into a mass which bulges out more and more and finally separates off from its base. In this way, the two testes lose their support posteriorly and come to sink down anteriorly. They are now only suspended by their efferent ducts which are, so to speak, their pedicles. They sink downwards in a graceful curve on either side of the urinary bladder* until they reach first the inguinal region and finally the scrotum (vide chapter 1).

pronephros (*Müllerian body*). Thus, right from the beginning, two different types of genital system are recognisable. Strictly speaking, we should not speak of a sexual system or genital system, until the specific new formation of reproductive cells occurs at puberty. Until then, there really exists only a dimorphous development of an embryonic tumour. Similarly the dimorphism of the external "genitals" at birth is simply a consequence of the predominance of the Wolffian body or of the pronephros. This dimorphism is not always absolute, so that occasionally we find hermaphrodites with mixed ovarian and testicular tissues in the reproductive masses. Some authors even maintain that the original rudiment normally contains both types of tissue.

* The two canals make an especially wide curve every time the bladder is full.

So later, after puberty, when the sperm-cells are voided, they follow the original urinary passage of the Wolffian body which at first ascends steeply, until the two sperm-ducts approach each other from right and left to join the unpaired urethra deep in the abdominal cavity.

In the same way two reproductive masses of the female type become separated from their bases, but remain attached by a few strands of connective tissue, so that the two ovaries do not sink down nearly so far as do the testicles. Furthermore, there is no coalescence with a glandular organ, so an ovary is considerably smaller and flatter than a testicle, of simpler shape, just like a tumour. For in embryos which undergo female development, the Wolffian bodies and their efferent ducts disappear, leaving only a few vestiges. For this reason, when in the course of time, the egg-cells become ripe, they will not be so fortunate as to find an efferent duct ready for them, as do the sperm cells. After puberty, each time an egg-cell ripens, it must, like an abscess, force its way straight through the ovarian tissue by destruction of the surrounding cells. It reaches the surface of the ovary, bulges outwards, and, leaving traces of haemorrhage and scar tissue behind, it becomes free* and falls into the abdominal cavity. And what follows?

Fortunately, in every embryo, there is on each side not only the Wolffian body, with its duct, but also another canal. This opens exteriorly at the lower pole of the body and remains open at its inner end within the abdominal cavity. According to the latest researches, it is thought to be derived from the pronephros, a rudimentary organ which only functions as a kidney in some of the lower animals. In man, on the other hand, only small traces of the pronephros are found, even before the development of the Wolffian body. So the egg-cells must find an exit from the body cavity through this duct which is adjacent to, but not connected with, the ovary. Probably many of these egg-cells will be lost in the abdominal cavity. Others will find means of exit, for the internal

* The sero-sanguineous secretion of the uterine mucosa which we call *menstruation* appears often, though certainly not always, to coincide with this occurrence. Ovulation and menstruation *may* sometimes take place independently of each other.

orifice of this canal is close by and is dilated like a funnel. The free edge of this dilated opening is surrounded by a fringe of large *fimbria* whose undulating motions are essential for the entrance of the ovum. This funnel-shaped fimbriated opening is thought to represent the remains of the pronephros.

Finally, we come to the external "genitals" which we may better call the external efferent-duct-system of the embryonic Wolffian body and the rudimentary pronephros, for only after puberty will this system be used for sexual purposes.

Both of the above-mentioned efferent canals lead to the lower pole of the body of the embryo, where their orifice forms a small protrusion called (in anticipation) the genital eminence. Later on in embryonic life, when the body cavity is closed and the genital eminence has become a small protuberance, it is still difficult to decide from this small papilla, whether it will develop into a *clitoris* with a short urethra or into a *penis*. Likewise, a pair of folds between the thighs may grow together to form a *scrotum* or remain separated to form two *labia majora*. Not before the tenth week after fertilisation, i. e. towards the close of the embryonic period, does the future sexual differentiation begin to be evident externally. In the male, the urethra becomes lengthened and is joined on either side by the "seminal" canals. Long before birth, these organs take on their permanent form. Although for many years the whole apparatus will continue to grow *pari passu* with other organs, yet the genital function will remain in abeyance, and meanwhile only the urinary system will be active.

Appendix on hermaphroditism.

Thus we see that the sexual differentiation is not so easy to determine as is generally supposed. At the very beginning of embryonic life, the genital masses are non-existent, and later, even when they do develop, it is at first impossible to decide how they will differentiate. And as has been shown, the external genitals, too, are at first quite undifferentiated.

Not infrequently, especially in cases of arrested development in boys (see page 11) this uncertainty may persist until puberty or even later. In such cases, one speaks of *hermaphroditism*

or double sexuality, because, although such individuals may not really be double-sexed, still they have some attributes of each sex. So, in ancient days, the imagination of man pictured double-sexed individuals who were termed hermaphrodites, because they combined the attributes of the god Hermes (Mercury), with those of the goddess Aphrodite (Venus). A real functional hermaphroditism is found only in some lower animals such as snails and earthworms, where every adult individual is capable of both male and female activity. Whenever they copulate, two male projections may be noticed, which deposit the semen. In the vegetable kingdom in the same way, most flowers contain both male and female organs.

In the history of evolution of species, the hermaphroditic condition is a transitional stage between asexuality and sexual differentiation. (vide chapter 40.)

In our individual development, a similar stage can be traced. We have seen above that during one period of the development of the embryo there exists a condition of double sexuality which is transitional between asexuality and sexual differentiation. This is true, however, only of the duct system. During this period, the efferent duct of the Wolffian body and that of the pronephros exist side by side. This conforms to Haeckel's law of a certain parallelism between phylogeny and ontogeny. In the adult body, each sex has only vestiges of the efferent duct system of the other sex.

A true hermaphroditism, with testes and ovaries, is not frequent in vertebrates. It is found occasionally either physiologically or pathologically in lower vertebrates — fishes and amphibians.

In birds it is found only pathologically, e. g. an ovary on one side and a testis on the other, and sometimes the plumage corresponds on the different sides of the body. In higher vertebrates and also in man such hermaphrodite freaks are only sporadic. Thus *Photakis* saw a hermaphrodite of twelve years, supposed to be a girl, who had an ovary with rudimentary ova on the left side and a testis without sperm cells on the right. A testis containing sterile ovarian tissue was once found in an adult hermaphroditic woman, and an ovary containing sterile seminal canals in a hermaphroditic pig. Sometimes there is found in the pig, in the goat, and even in man,

an ovotestis on one side or on both, i. e. an ovary with egg-rudiments joined with a testicular appendage containing seminal canals but no sperm-cell-rudiments. Only Professor *L. Pick* of Berlin was once able to demonstrate the ovarian portion of an ovotestis with ripe egg-cells and the testicular portion with rudimentary sperm-cells (*gametogonia*). This was the first time that true hermaphroditism of the reproductive cells was established in man, or, indeed, in any mammal. The microscopic slides of this case were taken from one Augusta Persdotter, aged fortythree, and were prepared by the Swedish savant, *E. Salén*, in 1898. After the death of the latter they were reexamined by Professor *Pick* in 1913 when these findings were established.

4. *The organochemistry of sexual differentiation.*

For some considerable time, the true significance of several small, functionally obscure, organs in the human body has been a vexed question. Finally it was found that they contain important chemical constituents which they pour into the blood-circulation. These substances are of great importance for the body-metabolism.

It has been observed that after radical extirpation of such an organ as the thyroid gland for exophthalmic goitre, the patient begins to suffer from general trophic disturbances, such as puffiness of the skin, dry epidermis, slowing of all mental activities, which might go on to complete imbecility. These symptoms will at once abate if the patient is given small portions of the thyroid gland, e. g. that of the sheep, or thyroid extract. It was further noted that the same treatment proved effective in the case of patients suffering from the same symptoms, which had manifested themselves spontaneously, without any operation. A small portion of this organochemical substance acts as a stimulant to the tissue metabolism. It cures obesity, renders the epidermis lustrous, and even improves cretinism, whereas a larger dose acts as a heart-poison, which may be observed by the acceleration of the pulse rate. As far as the sexual life is concerned, it may be added that, in a child in whom the thyroid gland is removed at an early period of its life, sexual maturity is retarded or prevented altogether.

At first it was believed that organs which furnished such extremely active substances, represented a new type of gland. As no efferent duct was found, their activity was referred to as "internal secretion" a term which is self-contradictory. But more and more such organs with active products were subsequently discovered, e. g. the thymus, the supra-renal bodies, the hypophysis (pituitary) etc.

The physiological effect of muscular tissue, especially of its extract, which acts as a stimulant and in excessive doses increases the pulserate, but is a cardiac poison*; had been

* The danger of a meat diet in nephritis, and in the toxæmias of pregnancy with unconsciousness and nephritis are perhaps to be attributed to the same organochemical substances. A pregnant woman is

known for some time, as was the fat-reducing effect of the Banting cure.

Thus, it became increasingly clear that all living organs contain typical chemical substances as the metabolic products of their ordinary cell-life. These katabolic substances are passed into the circulation by means of the lymph. Biologically considered, everything that is excreted by an organ is a katabolic waste-product. This does not mean to imply that such substances may not be of considerable value for other tissues of the same individual. From this point of view, glandular secretion is merely a special case of organochemistry. We should only use the term *gland* when we find the typical structure of a gland, especially when a duct is to be found, which serves to convey the waste products towards either the external surface of the body or the internal surface of the alimentary canal. All other tissues and organs, not excluding the above mysterious ones, give up their waste products to the circulation by means of the lymphatic system.

It is, therefore, not to be wondered at, that among metabolic products of all kinds, we find some of a strongly active nature, which we may classify as either poisonous, or therapeutically valuable, as the case may be. Thus we are acquainted with many normal products of katabolism derived from the most diverse tissues, which play an important part in modern medicine under the name of "organo-chemical" or better still "biochemical" substances. A classical example, and probably the oldest application of our organochemical therapy, is the administration of cod-liver-oil as a metabolical stimulant in cases of torpid scrofula. In olden days drugs prepared from the animal kingdom were very commonly used. We physicians are only too well acquainted with the effect of bacterial poisons as an example of the toxic effect of organochemical substances. The organochemical product of the yeast cell might be added here, as alcohol produces congestion of the skin and palpitation of the heart, and in excessive doses may cause death, generally by cardiac paralysis. It will be seen that the minutest organisms are often the most noxious.

doubly endangered, since she receives in her circulation not only the waste products of her own muscular tissue but also those of the foetus. Under these conditions a meat-diet constitutes a third source of danger.

Our normal health depends chemically on the neutral equilibrium of all those substances contained in the blood-stream either as food for the tissues or as their waste products. Organochemical therapy aims at adding those substances, of which in a given case there may be an insufficient quantity.

These considerations suggest a reason why, in the human body, all sorts of rudimentary organs which have long lost their significance, still persist, instead of having been eliminated. This is probably due to the fact that on account of their organochemical constituents, these organs are still of some value in the struggle for existence. Indeed the recent study of organochemistry began with the consideration of these very organs.

It was also noticed that if the testicles or ovaries were removed, the patient became feeble and debilitated. Hence, the organochemical effect of these organs was also studied. Brown-Séquard experimented with extracts of bull's testicles and met with some success. But far more definite results are obtained if, instead of administering extracts to the experimental animal, the living organs are implanted into it, e. g. into the muscles of the abdominal wall. Only by this procedure is a permanent effect likely to be obtained.

By experiments of this sort on animals, it has been proved that the organochemical substances derived from the testis or ovary are of paramount importance for the development of secondary sexual characters*.

The evidence afforded by the experiments of Professor Eugen Steinach (of the Biological Institute in Vienna) on rats and guineapigs, is incontrovertible. When still very young, their own testes or ovaries were removed, i. e. they were castrated or spayed. Then the reproductive masses of the opposite sex were implanted into their abdominal musculature. The reproductive elements of the implanted organs degenerated, but the other tissues proliferated**.

* There is a heated controversy as to which cells in these organs produce the substances in question.

** At the age of puberty, also a striking proliferation of the interstitial tissue of the testis is noticed. For this reason, the interstitial portion has been called the "puberal gland".

So that later on, only that part of the graft which produces organochemical substances could function. If the grafts took successfully, the animals, though eunuchs, developed secondary sexual characteristics, not those, however, of their original sex, but of that of the implanted organs. The masculinised, originally female animals, acquired a more robust build, and attempted to tread normal females, etc. In the feminised, originally male animals, the nipples developed, they showed a feminine coyness, took the female part in coitus, etc. Indeed, feminised male rats even suckled one or two young ones with maternal tenderness!

Thus the presence of either testes or ovaries, decides the development of the sexual characters, not only because of the production of egg-cells or sperm-cells, but also because of the specific organochemical substances which are poured by these organs into the circulation. These organochemical substances are responsible for the sexual stimulus by which our whole bodily development, and our psyche as well, is dominated. Especially these organochemical substances govern the appearance of one or other type of secondary sexual characters, as has been shown. Investigators have gone a step further and have inquired if they are not ultimately responsible for the appearance of the reproductive cells also, which is, after all, the most important point. Elsewhere too, new tissue-formation is often seen to be provoked by chemical stimuli, e. g. by toxins which are organochemical substances derived from bacteria and other micro-organisms.

We saw on page 27 that organochemical substances derived from our own tissues might be active in the same way. We pointed out that if the thyroid gland is removed radically in childhood, sexual maturity will be retarded, or may be suppressed altogether. It cannot be doubted, after Steinach's experiments on animals, that the organic substances from testis and ovary have at least an equal influence in this direction.

This theory is corroborated by the fact that sexual maturity can be produced artificially at other periods of life, if one can succeed in starting the production of the respective organochemical substances.

Thus, Professor Steinach has succeeded in restoring fully the formation of reproductive cells in rats sterile from old

age. He did this by artificially exciting the secretion of the respective organochemical substances. An obvious, though temporary, rejuvenation resulted. In male rats, the ligature and section of one sperm-duct was all that was needed. This caused the sperm-producing element in the corresponding testicle to atrophy, and the other element to hypertrophy. In female rats, however, implantation of a young ovary was necessary.

Such a "rejuvenation treatment", as it is called, has been successful, though as yet only over a short period, in the treatment of impotence in men. It might possibly be also effective in curing frigidity in women.

These radical operations should, however, not be undertaken too lightly, for such a condition is sometimes nature's method of ensuring mental repose.

Professor Steinach also succeeded in artificially producing a premature sexual maturity in very young animals. He was able to do this by any agency which would destroy the rudiments of the reproductive cells and cause proliferation of the other tissues. The following are such agencies: transplantation to some other site; X-radiation; heat; intoxication; and in males, ligature and section of both sperm ducts. Unfortunately, if the reproductive masses are damaged on both sides, all formation of reproductive cells is henceforth impossible. I have not been able to ascertain whether this last experiment has been done unilaterally. If so, the premature sexual maturity might be accompanied by the production of reproductive cells. In this connection, the following case of a unilateral lesion, in which there occurred seminal nocturnal emissions in childhood, is very significant.

I refer to the case reported by Lacchi*. This case was a boy, aged nine, four feet seven inches high, with beard, erections, sexual appetite and sexual emissions. The left testicle was amputated for carcinoma, and within four months every one of the above phenomena disappeared. This disappearance is significant as a control-test.

The appearance of sexual phenomena is thus a profound

* An analogous case is mentioned in the *Zeitschrift für Sexualwissenschaft*, August 1921, page 167. A girl, aged six, with fully-developed breasts, had sarcoma of the ovary. This was extirpated. The phenomena of premature nubility disappeared. The patient became a child again.

modification of normal vegetative growth. This modification manifests itself first as a change in the composition of the body-fluids, and later by a new cell-formation — two processes which are hardly separable. Similarly, it is the sap of the tree which causes its fruit to grow*.

We do not know at present exactly how these organo-chemical substances determine the direction of sexual desire. Theoretically one might suppose that these specific substances exert specific influences on the brain-cells. But this may be regarded as rather speculative and does not help us much.

The following hypothesis appears to me more probable. It is as we have just seen an essential condition of life for all animal organisms that the different organochemical toxins should balance and if necessary neutralise each other. In a hermaphrodite animal the corresponding toxin of the gonads might easily fulfil this condition. But since division of the sexes has taken place (vide chapter 40) copulation may be regarded as a rather imperfect means to the same end. While the exchange of juices in kissing and copulation is not very considerable, a mingling of cells does occur. In the process of fertilisation the cells concerned practically neutralise each other biochemically by chemiotaxis, so the next generation is for the time being undifferentiated. Thus from the very beginning only such individuals could properly procreate in whom this ancient impulse to find an antitoxin for its own toxin persisted unimpaired. Thus even to-day the toxin of the ovaries causes attraction towards the male, and the toxin of the testis an attraction towards the female, in the same way as during the consumption of food all plants and animals prefer those constituents of which they are at the moment in want**; and thus both the mutual attraction of the reproduc-

* As far as I know there has not been much investigation of the chemical processes accompanying the appearance of sexual phenomena in plants. It has long been known by pharmacologists that flowers often contain chemical substances different from those of the vegetative cells of the same plant. Vide, "Do Plants Possess Hormones?" by A. Tschirch (Bern) in the *Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich* 1921, page 201.

** Several other authors have frequently pointed out the analogy between the copulation impulse and the food-impulse.

tive cells and the mutual attraction of the two sexes may ultimately depend on organochemical chemio-taxis.

That cell-life may be totally changed by such delicate influences will be easily understood by anyone who has read *Darwin's* work on Domestication, Chapter 71.

Fain would we trace the chain of causes of our sexual differentiation further, so that we might thoroughly understand this point too. Fain would we know the cause of the first sexual differentiation of the individual, i. e. why, in the embryo, certain epithelial cells which, at first, are surely indential should, after segregation, develop in some reproductive masses into large cells, and in some into small cells.

The following hypothesis seems to me the most probable, It has long been thought and has often been demonstrated experimentally in both plants and animals, that under favourable conditions, i. e. with an optimum of food, moisture and warmth, etc, a larger percentage of females occurs, and vice versa. It is obvious that under such favourable conditions larger cells will be formed. The egg-cell later on will be large and rich in yolk. Vice versa, under less favourable conditions only small cells will be formed. Correspondingly, the sperm-cells later on will be characterised by absence of yolk.

This is corroborated by the experience of ethnographers that polygyny is more frequent in warm and fertile regions, while polyandry is more frequent in cold, arid, mountainous districts. The observations among savage races show that in man also, nature breeds a surplus of females in favourable conditions, and vice versa. Otherwise these customs would never have become general. In this way it is easily understood why after a devastating war, the number of male births used to be so noticeably high. This might be due to the misery it has caused. Now, however, the universal rationing and other protective measures have apparently prevented the occurrence of this inequality, in spite of their very slight alleviation of the misery. Yet in the annual report of the Statistical Department in England, we find statistics of the male births during the last twenty years, from which it is evident that the percentage of male births has risen parallel with increase in the cost of living, and the excess of male births in 1919 was greater than ever before since statistics were first

kept in 1835. (vide graphs in "Vorwärts", Berlin, January 13th 1921).

In accordance with this hypothesis, one would expect approximately equal numbers of males and females if such catastrophes and adverse conditions with their influence in the birthrate were excluded. Indeed, in those countries where vital statistics are carefully kept, there is found on the average, an excess of male births amounting to about 30%. It appears therefore, that the general prosperity in these countries is neither favourable nor unfavourable*.

Possibly, however, hereditary influences are concerned in producing equal numbers of males and females, as the Mendelian theory would indicate. In his hybridisation experiments in his garden, Mendel crossed white beans of pure stock with dark beans of pure stock. Later, white sheep of pure stock and black sheep of pure stock were crossed, and so with all sorts of obvious characters. In man, hereditary characters like haemophilia and colour blindness were tested in the same way and statistics kept. In these experiments with plants and animals, hybrids resulted which were crossed again with each other in various combinations and generations. After many experiments Mendel could predict in what ratio in any particular case the characteristics in question would appear. There are cases in which the respective characters are to be expected in equal numbers. Possibly there is some similar basis for the ratio of the two sexes.

Correct information on all these questions of heredity will be yielded by the study of mitotic figures of the reproductive cells in their development (vide chapter 40, Chromosomes). At the moment, however, it is still too hypothetical to be included in this work.

Appendix on hermaphroditism.

Besides the different types and gradations of hermaphroditism mentioned at the end of the previous chapter, we must refer

* It was shown in the beginning of this century that in these countries, there were 106 males born to every 100 females. In Austria und Italy 107, in Switzerland 99. It is the greater mortality of males which brings about the excess of females during the marriageable period.

to that kind of hermaphroditism which occurs if the organochemical substances of both sexes are produced in the same individual.

The possibility of the type of bi-sexuality cannot be denied, for such cases have been produced experimentally. On simultaneously grafting testes and ovaries into animals previously castrated, Steinach obtained a bi-sexual type, a kind of artificial hermaphrodite, showing alternate periods of male and female tendencies. On microscopic examination these were found to coincide with alternating proliferation of (1) interstitial tissue of the testes and (2) of the tissues surrounding the egg rudiments of the ovary. On the other hand Knut Sand found both tendencies occurring simultaneously in such experiments.

This experiment is of special importance for the comprehension of sexual differentiation, because it brings us considerably nearer the solution of a difficult question. Men were known to exist who felt no sexual attraction towards women but rather a pronounced sexual craving towards men, i. e. towards their own sex, for which reason they were called homosexual. Similarly, there are homosexual women who are only attracted towards women. Since we know through Steinach's experiments that sexual attraction towards one or other of the sexes is largely determined by the presence of organochemical substances derived from either testis or ovary, the inference was drawn that such an individual peculiarity whenever it is congenital, is to be imputed to the presence of the wrong organochemical substances. A man need not possess an ovary, nor a woman a testis; it would be sufficient if the testis contained ovarian tissues and vice versa.

Steinach's above mentioned experiment teaches that cases with such a hybrid gonad may be produced artificially, and at the end of the previous chapter we found that such hybrid cases occur naturally. Further observations at post-mortems and possibly during operations will have to elucidate how many cases of homosexuality are due to such hybrid gonads.

In the meantime these discoveries have already produced signal results. During the summer of 1916, Dr. Lichtenstern is said to have succeeded in rendering a pronouncedly homosexual man pronouncedly heterosexual, at the patient's own

request by bilateral castration and subsequent implantation to a normal testicle which was removed from another patient on account of cryptorchism (imperfect descent). The transformed homosexual has subsequently contracted a happy, though sterile, marriage.

Even should this type of operation prove successful, the majority of homosexual individuals will probably hesitate to have it performed on them. They are not unhappy on account of their peculiarity, but rather on account of our prejudices. It is we who are diseased and in need of cure. We must accept the fact that nature has not endowed all people with the same sexual desires. Even the separation of the sexes is not absolute.

Of the more psychical sexual differences which are surely far more diverse than the somatic difference, we shall deal at greater length in chapter 59. Psychically, we are, perhaps, all of us somewhat hermaphroditic, since we are derived from a father as well as a mother.

5. *New cell Formation after puberty.*

When at puberty the primary energy of childhood has died down and the growth of all the organs of the body is almost complete, both sexes to their great astonishment feel a new impulse. This is a recurrence of growth-energy emanating from the two small reproductive masses, which after their first rapid development during the embryonic period, remain quiescent, as if they were destined to be rudimentary organs of no value. Now, however, there occurs suddenly a new stimulus to tissue-formation, and this setting free of unicellular organisms is the first beginning of the real sexual life, for hitherto the sexual life had only been of an infantile type.

During this period new life animates the testes and the ovaries. In the testis marked proliferation of the interstitial tissue occurs, whereby the organochemical substances referred to in the last chapter are elaborated, and from now onwards countless sperm-cells are formed and voided in large numbers at short intervals. In the ovaries, too organochemical substances but of a different kind are formed and from now onward semi-fluid egg-cells are matured and cast off though at much longer intervals. We have seen above (page 22) how the egg-cells have to force a laborious passage through the ovarian tissue. But how is the new cell-type formed in the male?

As pointed out on page 23, the internal surface of the smaller canals in the adult testis are lined with cells as though they were glandular tubes. These are the descendants of the epithelial cells that became segregated in the reproductive mass. In their final stage of development, they are each provided with 50—60 protoplasmic threads or cilia. Thus, it appears as though the tube were lined with ciliated epithelium. On more careful microscopic examination it is seen that these cilia are arranged in the cells like the spikes of an ear of wheat. A new cell division, a reduction division (vide chapter 40) brings about the separation of these cilia, with a small portion of the mother cell attached, to each, forming the head of the spermatozoon*,

* When the spermatozoa were first examined under the microscope, and it was seen how they moved about by means of the lashing motions of the flagellum, they were considered "sperm animalculi" (spermatozoa) having a head and tail.

while a certain unevenness at the juncture of head and thread marks the margin where the new cell has torn itself away from the mother cell. The mother cell finally has the appearance of an emptied ear of wheat.

Such a sudden appearance of countless new formed single cells often occurs during life, for instance, during inflammation with pus formation due to infection. We shall try to draw a parallel: between such a common case of inflammation and the appearance of sexual maturity. This will afford a striking example of the ease with which a categorical distinction between pathological and physiological processes may be maintained in practice. without its being as fundamental, biologically considered, as used to be thought.

Let us consider, first the condition of inflammation. Due to the specific action of organochemical toxins derived from bacteria, countless white blood corpuscles collect with the phenomena of local venous congestion. This vast afflux of new formed pus-cells is apt to cause a severe local reaction, and if fever intervenes, a general physical and psychical reaction as well. These cells are the well known phagocytes, which are chemotactically attracted towards suitable food material, but which are incapable of leading a separate existence as unicellular organisms. The next consequence of an inflammation comprises two categories of phenomena, on the one hand, increased tissue-formation, on the other increased tissue-destruction.

Now let us take the approach of sexual maturity. Caused by the specific action of the organochemical substances referred to in the preceding chapter, and accompanied by great local venous congestion, large numbers of newly formed sperm cells make their appearance, and there occurs a profound local effect, and sometimes a profound general effect psychical and physical, as well. As soon as conditions are favourable, the sperm-cells approach the egg-cells which are rich in food and towards which they are chemotactically attracted. By themselves they are incapable of separate existence as unicellular organisms. The next consequence comprises two categories of phenomena, increased tissue-formation and increased tissue-destruction.

The path taken by pus cells often leads right through the tissues just as the egg-cell passes right through the ovarian tissue. Frequently pus travels along existing paths, in the same

way as sperm cells do. In an ordinary pus-formation in a delicate tissue, the abscess gradually becomes smaller as more pus-cells are discharged. Thus, just as in the ovary, sooner or later a complete cessation of all activity occurs. This does not always happen, however. Consider for instance an atheromatous cyst with a cartilaginous wall, such as is sometimes seen in the scalps of aged persons. For many years it may remain quiescent. But if it softens and bursts, or is incised and becomes inflamed, then prolific cell-production will continue till the cyst is extirpated. In the same way, cell-production does not easily cease in the testis because here too the proliferating focus is enclosed in a hard capsule.

Pus cells cannot conjugate as reproductive cells can, because they are all built on the same type and are thus incapable of exerting a chemotactical influence on each other. The fact that our reproductive cells are of two different types is a consequence of the dimorphous nature of the swelling, from which they are derived. (vide footnote on page 23.)

We may pursue the parallel even further. All those influences which are apt to stimulate the sexual desire too much and which should, therefore, be avoided by persons who are easily aroused sexually, as we shall discuss more fully later on (chapter 32), are, curiously enough, exactly those which should be avoided in inflammations and conditions of pyrexia. Contra-indicated in both cases are: any local mechanical pressure, increase in blood pressure, the consumption of spicy food and other stimulants, especially alcohol, all superfluous nourishment, especially of an albuminous nature, local heat, local massage, psychic exaltation. Conversely, those drugs which inhibit sexual excitation, as quinine, and salicylic-acid-preparations, are the most useful anti-pyretics.

Fever and heat are originally devices of nature which increase the energy* of metabolism and so remove noxious influences. It is a pity that this remedy occasionally acts with too great a violence. Similarly, sexual life is an increase in

* Nature is often somewhat violent, as in the fable, the bear, noticing a fly on the head of a sleeping hermit, kills it with a stone, but unfortunately smashed the hermit's head at the same time. Thus, it becomes clear why we physicians must nearly always inhibit morbid phenomena instead of stimulating them.

energy, without which cessation and decay (vide chapter 66) would set in after the body has almost reached the end of development. It is most unfortunate, that it so often appears with such unbridled violence. In the same way as relief is always experienced after the voiding of pus, so sexual desire is relieved every time the reproductive cells are cast forth. A certain analogy between the two cannot be denied.

Such an analogy between reproductive cells and pathological tissue formation cannot astonish us. The reproductive cells are really the mature product of a tumour, which, as we have seen in the development of the embryo, has been formed by the intimate coalescence of two different systems of tissues, quite similar to the development of a pathological tumour. In the male sex it produces a typical pathological lesion even so that it totally permeates its neighbouring organ, the Wolffian body.

Embryonic life affords several similar unexpected phenomena. According to the hypothesis of Cohnheim, many of our pathological tumours are derived from embryonic rudiments. They start developing, however, only at a far more advanced period of life, and often only as a result of special irritation, and they then often disseminate single cells, a process which we call *Metastasis*.

Dr. H. Rotter, of Budapesth, considers all carcinomata and sarcomata to be derived from fragments of the primitive reproductive cells which have strayed from their original situation.*

We shall not, however, confine our parallel to the pathological point of view. Biologically considered, any kind of tissue-formation, even of a pathological nature, is the expression of certain growth-energy, which must be present to produce the tissue formation at all. If we consider the various types of tissue-formation as they appear at various periods of life, we shall find an underlying definite scheme, since the diverse tissue-formations are an expression of a multifarious growth-energy pertaining to different periods of our life.

* Vide *Zeitschrift für Krebsforschung*, Berlin, Hirschwald, 1921, page 171.

In youth the energy of growth is still at its height, and during this period it expresses itself in normal vegetative growth. As soon as this energy of growth becomes exhausted, it can manifest itself only in a different manner, namely, in the formation of unicellular sexual organisms. When with advancing age this form of energy, too, ceases, there occurs a typical, abnormal pathological tissue formation only here and there, in the different body tissues. These are often without significance, and may pass unnoticed, though sometimes they are malignant and fatal.

Thus, it is evident that the sexual cell-formation of sperm cells and egg-cells occupies a position intermediate between normal growth which governs everything in childhood, and pathological tissue formations as they appear in age. This defines the peculiar position of the sexual life in contrast to our normal vegetative existence, and throws a different light (vide chapter 40) on the history of sexual evolution.

We shall now, briefly, discuss this intermediate position from various points of view.

(1) With reference to the age at which cell formation appears. Normal growth is most active in childhood. Pathological tissue formations occur chiefly in age. Sexual cell-formation, however, occurs at puberty.

(2) Ordinary growth is most rapid at the body surface (skin, mucous membranes, nails and hair). Pathological tissue formations occur mostly in circumscribed areas of tissue. Sexual cell-formation, however, takes place deep in the body but in some degree is still in communication with the exterior.

(3) Ordinary growth is a normal isomorphous tissue-formation, i. e. the newly formed cells are identical with the tissues from which they are derived, at least at first. Pathological tissue-formations are nearly always heteromorphous, sometimes even altogether abnormal. They send into the surrounding tissues processes which tend to become constricted and separated off. The sexual cell-formation is also heteromorphous to the parent tissue in both sexes and is so little suited to the cells about it that it soon becomes detached. In this case, however, the heteromorphous cell formation is a *normal* phenomenon.

(4) Ordinary growth proceeds from the presence of a sufficient quantity of normal chemical food material.

Pathological tissue-formations are often caused by the abnormal stimulus of toxic organochemical substances derived from bacteria and other organisms. The maturation and separation of the reproductive cells from puberty onwards, however, is due to the stimulus of the organochemical substances mentioned in the preceding chapter. Here, too, an extraordinary chemical stimulus is responsible, but in this case it is a stimulus which is derived from a growth normally present.

It will be seen in chapter 40 that in the beginning of evolution, vegetative growth was the only normal mode of growth, whereas pathological tissue formations occur as accidental illnesses. Sexual cell formation was, at first, a very special type of modification, but one which proceeded from the very essence of organic evolution.

A further characteristic of the reproductive cells as distinct from the other two types of tissue-formation is that the former are cast off immediately they are formed in their pristine vigour, while they are still almost fluid protoplasm, and not when they have reached an advanced age. In higher organisms, this is quite a special characteristic* only belonging to reproductive cells. For this reason they *are* reproductive cells.

For the purpose of fertilisation it is absolutely essential that they should be cast off. Otherwise, they could never meet. They must be cast off in at least one of the sexes, e. g. in plants, the pollen grains are scattered while the ovules remain in the embryo-sac. It is equally essential that at the time of separation they should be semifluid, at least, internally**. Otherwise, how could they conjugate?

When the reproductive cells have once become separated from the parent cells they must be discharged from the body. Even as regards this discharge, the reproductive cells occupy a position intermediate between increase of growth on the one hand and the tumours of age on the other.

* Elsewhere this phenomenon is found only in the most primitive organisms both vegetable and animal; here it occurs in every cell division since they are unicellular organisms.

** Only in very primitive organisms where conjugation is not required for reproduction, old, dry, resistant cells are the spores cast off.

In normal growth, only the superficial layer of cells of the epidermis or mucous membrane is spontaneously cast off, when worn out and degenerated. In more deeply situated tissues only the waste products are got rid of through the lymphatics or sometimes, even through special glandular ducts. All these processes occur naturally; external influences such as massage, etc., may help but are by no means indispensable.

In pathological tissue formations, however, the surgeon's knife is nearly always required to remove the tumour.

In sexual cell-formation the casting-off is not so easy as in ordinary growth, but, normally, not as difficult as in pathological tissue formations. We shall discuss this as it occurs in the two sexes in a little more detail.

At first, in both sexes, there is no need for external aid. Later on, however, the act of copulation is normally required for the emptying of the seminal vesicles in man and for the proper contraction of the uterus in woman. For the act of copulation, a partner is, however, necessary. We have here the curious phenomenon that two individuals are required for the natural performance of a physiological need. It is fortunate, that, for other physiological functions, such as digestion and respiration, a partner is not required.

As in the removal of a pathological growth, an operation is necessary, so in this case, the woman will in time, after fertilisation has taken place, require the services of an accoucheur. At least his advice and assistance are often required during parturition and only too frequently operative interference is unavoidable.

Though our unnatural and far too sedentary mode of life, and our often very unsuitable clothing may be in part responsible for the complication of parturition, in the history of human progress, we should not forget that even in the most primitive races, and in higher animals, birth is far from being a simple process. In the most normal cases, the separation of the newly born from the umbilical cord is a sanguinary operation, which is unavoidable even in wild animals, who tear or bite it through.

It is certainly a great advance for us men, that our new formed cells are always of a microscopic size and that they have a point of exit ready at hand, while in woman the final process of separation is often very difficult. If in their marital

relationship the two partners are grateful to each other for their mutual aid, the mother is possibly far more grateful to the accoucheur, where everything has gone off well. And the solemn kiss given to the accoucheur, which used to be customary in high society, was no less heartfelt expression of gratitude and no less sacred than the parting kiss after marital intercourse.

Appendix on plant life.

In many plants the first period of normal vegetative growth may be divided into two sub-periods. After the end of the period of spring-growth in trees and shrubs, evidences of summer-growth will be seen on many little branches in early summer. This is a recurrence of leaf-formation at those points where the first growth had ceased, and here leaf-buds are formed as before. It is thus a purely isomorphous tissue-formation. Only at the right season of the year do flowers appear, and they are as extraordinary a heteromorphous tissue formation as sexual maturity is in animals. In higher plants the coöperation of two sexes is essential for the process of fertilisation, and in this process external aid is often helpful and sometimes absolutely indispensable. We refer to insect pollination.

And when trees become old, one often sees tumours and malformations in them, especially atypical branches and shoots appearing at any points where the superficial tissues are wounded and so embryonic overgrown buds are induced to find a new outlet. This again reminds one of Cohnheim's theory (page 43). In the appendix to Chapter 7 we shall refer again to these atypical shoots.

6. The migration of the newly formed sperm-cells.

We shall now note how, after maturation and separation, the sperm-cells find an exit along a very convoluted duct-system. Unlike that of the female organism (page 25) this path, though uninterrupted, is very complicated. This is not surprising in view of the fact that an embryonic renal system has been utilised. We must descend into the mysterious workshop of nature, in the cellar of our body, where we find two explosives which constantly convulse the world. It is not a death-dealing explosion, however, but a life-giving one. Let us carefully examine the structure of such a testicle.

When it reaches its final shape just before birth, it is not spherical but ovoid, bean shaped like a small kidney, but rather less flattened. The small organ is surrounded by a very resistant capsule of connective tissue, and internally it contains no fluid but only solid material. On section it is seen to be made of countless finely convoluted tubules which have been referred to on page 21 and which under the microscope look like ordinary gland-ducts. Internally they are lined by a layer of cells which look like gland-cells but which are derived from the epithelial cells which were segregated in the embryo. To the naked eye these canals appear as thin threads, like a torn piece of crochet-work, all tightly packed into longish cones, which are separated from each other by firm connective-tissue septa. These septa are really prolongations of the external capsule which project between the cones and become thinner as they proceed. The whole scheme is really somewhat similar to that of the kidney. The softer tissue between the fine canals is the interstitial tissue which in all probability manufactures as its metabolic product, the above-mentioned typical organochemical substances governing sexual differentiation*. The apices of these cones are directed towards a single point at the centre of the slightly concave side of the testicle corresponding to the point in the kidney where the efferent duct and the bloodvessels emerge, and to the spot in the bean where the embryo is situated.

* In the ovary these organochemical substances appear to be elaborated by the tissues adjacent to the egg-rudiments.

These fine canals gradually amalgamate to form larger ones (thus giving the cones their shape) and at the point where the cone-tips meet, and larger canals emerge, these larger canals, still strongly convoluted, form a thickening, the epididymis*, at the hilum of the testis. In this way, the reniform shape is disguised, and the whole organ appears somewhat ovoid like the phalanx of a finger.

In the epididymis, the larger canals converge further to form a single duct which finally emerges at one pole of the testicle, suspending the latter lengthwise.

This duct which is firm-walled and unconvoluted is known as the *vas deferens***. As mentioned on page 21 it may be felt as a thickened cord through the skin of the scrotum, and seems as if it were the stalk by which the testicle remains suspended after its descent. In reality, it is the first part of the male genital canal. The sperm-duct runs upwards from the testicle along the groin, enters the abdominal cavity, describes a graceful curve at the side of the urinary bladder, and proceeds to the posterior aspect of its base. (See page 21.) Here the two sperm ducts converge and open with very fine apertures into the wide urethra. From this point onwards the urethra serves to convey both: urine and semen.

Just before opening into the urethra each sperm-duct is provided with a lateral reservoir, the *seminal vesicle*. These are elongated and lie on each side against the posterior wall of the bladder.

When we use the terms *seminal canal* and *seminal vesicle*, we must remember that these are traditional names bound up with traditional errors. If one chooses names drawn from plant life, one would not say *semen* (seed) but rather *pollen*, for seed is the end result in the ripe fruit. In some races, however, and especially among the ancients, we find the view that the male supplies the seed and the female is simply the field in which it is sown. This is surely the height of male vanity. (vide chapter 50.)

* The epididymis, together with its large duct is the only vestige of the Wolffian body which has remained intact.

** The canal alone is called the *vas deferens*, and together with the associated structures, i. e. blood vessels, nerves and peritoneal covering, is known as the spermatic cord.

This whole apparatus remains in its rudimentary latent condition till the age of puberty*. Even the cells lining the minute canals remain inactive until puberty, since they are not glandular cells. We have shown in the previous chapter how, after puberty, sperm-cells are formed in millions by a new and unusual type of cell division. They are detached with a minimum of moisture** and are simply pushed along by the newly formed cells behind them. In their further course in the epididymis, they are transported more actively by the ciliated epithelium which lines the tubes there. I shall here, once for all, explain what is meant by the term *ciliated epithelium*.

Ordinary mucous membrane has a surface layer of flat cells, and so has the epidermis, but in the mucous membranes they are soft and moist. In some of the body passages, however, such as the respiratory passages, each of these superficial cells is provided with a delicate contractile protoplasmic thread which during life is in rythmical motion. The whole surface looks like velvet. Enormously magnified, it might be said to resemble a meadow with the grass undulating in the wind. The wave of motion always travels towards the exterior, so that in the respiratory passages, for instance, the collective action of the individual cells results very effectively in expelling small foreign bodies and particles of mucus. The cough, of course, also helps towards the same end. By a similar motion the egg-cells in the female enter the Fallopian tube and are propelled downwards towards the uterus. So also, in the tubules of the epididymis***, the sperm-cells together with a small quantity of fluid are propelled by its ciliated epithelial lining towards the sperm-duct. Here they are moved on much more quickly by peristalsis, i. e. a wave of contraction of the muscle-wall, for the walls of the sperm-duct and those of the seminal vesicle contain connective-tissue and unstriped muscle-fibres†.

* The seminal vesicles may be considered the two urinary bladders of the Wolffian bodies.

** As all connective tissue is permeable; our whole body is everywhere saturated with lymph. Our epidermis alone forms a resistant covering.

*** The most minute tubules in the testis itself appear to be lined with ciliated epithelium. They are not so lined. The appearance is due to the sperm-cells projecting from their parent-cells.

† For the various types of muscle, *vide* glossary at end of book under *muscles*.

Thus we see how these newly formed cells are carried towards the exterior of the body, ever more quickly, along ever widening channels.

Finally, the sperm-cells reach the two lateral appendages: the seminal vesicles. Many enter these and mix with the mucous secretion of their walls while others collect in the seminal-duct and only mix with the mucous secretion, when, at the right time, a strong contraction of the seminal vesicles and seminal-duct occurs. The resulting mixture of mucus and sperm-cells is known as the semen, and is ejected into the urethra and thence out of the body*.

Up till now the sperm-cells could only remain motionless like the egg-cells, but now there is enough space for them to move actively. A sperm-cell under the high power of the microscope appears like a longish dot, (the part of the mother-cell cast off at the reduction division) provided with a curved hair-like tail (*flagellum or cilium*). The whole consists of almost fluid protoplasm. Have you seen frog-spawn in an early larval stage in an aquarium, when the black spot acquires a filiform tail and rushes about in the water? This bears a crude and highly magnified, but pretty accurate**, resemblance to the movement of the sperm-cells, when a sufficient quantity of fluid medium enables*** them to become active.

Like a boat propelled by the spiral movements of a single oar at the stern, the small spot, the sperm-cell, is propelled forwards by the wavy motions of the flagellum at its hinder

* John Hunter was of opinion that but few of the sperm-cells entered the seminal vesicles, though the then prevailing view was that the latter were entirely filled with sperm-cells. Post-mortems, however, show quite clearly that in man both seminal canals and seminal vesicles act as reservoirs for the sperm-cells, though in the vesicles there is an excess of mucus. In those species, however, where seminal vesicles are vestigial or absent, only the seminal ducts act as reservoirs.

** It must be remembered that, under the microscope, both the extent and the rate of movement are greatly magnified.

*** Water paralyses these movements for a time. Weakly alkaline reactions favour them. The cells are killed by a very weakly acid reaction, or by a strongly alkaline one. The latter (e. g., soapy water) acts by dissolving the mucous masses in which the cells lie. The most suitable medium for them is the neutral moisture of the female genital canal.

end. Every freely-moving cell is attracted by food and other useful chemical substances (positive chemotaxis) and repelled by poisons and other noxious influences which would coagulate protoplasm (negative chemotaxis). And so, as soon as the sperm-cell, which is almost devoid of deuteroplasm (yolk), enters the female genital organ, it is attracted by positive chemotaxis towards the egg-cell, which is of far greater size and contains much deuteroplasm.

A sperm-cell consists of little more than a nucleus and a flagellum, while an ovum, like any ordinary cell, has a large amount of deuteroplasm surrounding the nucleus. Under exceptional circumstances, in some lower animals, it is possible for an egg-cell to live and develop into an adult individual without conjugation with a sperm-cell (Parthenogenesis), but we know of no instance of a similar development of a sperm-cell without the aid of an egg-cell.

The sperm-cell and egg-cell differ greatly in size. The latter, which is spherical, has a diameter of : 17 millimetres and can just be seen with the naked eye, while the former, including the tail, is only : 05 mm long. The passage of the sperm-cell along the moist walls of the vagina and uterus is like a great ocean voyage. For these delicate creatures it is a fateful journey fraught with the danger of utter destruction. Of the 200 million sperm-cells discharged at a single ejaculation, only one survives if fertilisation ensues.

Even in the case of twins at most, only two egg-cells and two sperm-cells may survive. All the rest are destined by nature to perish in the maelström. This fecundity is Nature's device to ensure the continuance of the species.

* The total number of egg cells present in the ovary of a woman is far smaller: Henle found in the ovary of a girl aged 18 years 36000 egg-rudiments; Sappey in a girl aged 3 years found 400000 egg-rudiments, of which 300 or 400 probably reach maturity and are cast off.

7. *The nuptial flight of the new generation of cells.*

In midsummer, many insects acquire the power of flight, and swarm out to pair. Vast numbers fail to be fertilised, and perish. In the same way these unicellular organisms swarm out, free and unhindered, each striving with all its might to be the parent of a new generation.

Till now they have been like tiny bricks firmly enclosed* and tightly packed in a composite structure, with which they sooner or later should have perished. Now, however they suddenly become quite free!

It is impossible for us to realise what this freedom means for such a unicellular organism, for long ago all the cells in our body became fixed in position, in order that they might develop along special directions to serve special functions.

They are like a lot of factory hands in a big city, hardened by rough usage; deafened by the ceaseless noise: blunted by the endless monotony. They are all tied to their own trade and their own job. Only a few of them retain their original humanity and geniality. And yet these wheels in the industrial machine, and indeed all of us, sprang, long, long ago, from *all-round* men who lived a natural life, formed family groups to fight the battle of life for themselves, hunted or cultivated their food in the open air, acquired knowledge, not from books or newspapers but from their own experience of life, cured themselves when they were sick, and comforted themselves when they were sad or terrified.

This illustration from the history of the human race gives a clear picture of the evolutionary history of cell-life too. Our adult cells have long since forgotten that the primordial cells, from which in the course of evolution all higher species have developed, had to perform all functions, though in an elementary fashion, for themselves. In these unicellular organisms each cell had the power of changing its position, of ingesting food, of excreting waste-products, of growth, and of division. If the two cells resulting from such a division became quite separated the division was equivalent to reproduction.

It is very different now. In our multicellular organisms,

* Vide appendix at end of this chapter.

all the cells of which that gigantic cell-colony, our body, is composed, have long since lost this plurality of function, and become altered in various ways. They have become specialised to fulfil various special functions. The cells of the epidermis have become horny to form a covering, the skeleton has become hardened to form a support, the muscle-cells have become woven into elastic strands for the purpose of movement, the whole and all its parts are surrounded and joined together by connective-tissue. We have quite forgotten the autonomy and independence of the single cell, we can no longer realise it.

But now, when we see this new generation of unicellular organisms swarm out from the profoundest depths of our being, we are once more reminded of it. We are transported again to that primitive period, the period of unicellular organisms. There is a new generation of free-born single cells, consisting of almost fluid protoplasm, possessing the same embryonic character as the cells from which the whole course of our evolution began, as yet quite undifferentiated for special functions, a raw material still young and available for any purpose.

The special character of the reproductive cells is that they have no special character, they are pure representatives of their species with variants determined by their ancestry*.

These cells, however, are too delicate and too feeble to be able to continue their existence independently. In the first rapture of the nuptial flight they pair at the earliest opportunity. So they double their energy and their useful elements by conjugating in couples.

But the fertilised egg-cell (*zygote*) at first still requires parental care, in order that a multicellular organism may develop by vegetative cell-division from the unicellular organism.

So the history of evolution continually manifests periodicity, an alternation of generations, first a sexual generation of unicellular organisms, then a vegetative generation of multicellular organisms. The life of these unicellular organisms is brief, but full of bliss; it is a nuptial flight. Then again follows a vegetative period of growth which naturally lasts far longer.

Later, when dealing with the history of sexual evolution we shall consider this theme at greater length. (See chapter 40.)

* Of course the characters as such are not inherited, but rather developmental types are repeated.

Appendix on plant life.

The extent to which the internal parts of organisms are influenced in their further growth by the epidermis, is best seen in plant life. Here too the law obtains that any surface exposed to external influences becomes hardened to form an impermeable epidermis. While it adequately protects the protoplasmic organism and prevents it from collapsing, it unfortunately renders any budding impossible as long as it remains intact.

Only in the axils of the leaves where the grooved stalk has inserted its vascular bundles laterally into the twig, this groove, which was originally only the feeble counterpart of the round twig, must gradually widen during growth, proportionate to the increase in size of leaf and stalk. On the outside of this groove there will be an increase in pressure, on the inside an increase in tension. As in ordinary growth in thickness, minute ruptures generally occur even in the thickest cork-layer, so the delicate epidermis, here in the centre of the groove, will in time suffer an at first microscopic defect as a normal phenomenon of growth. A bud can then appear at this point*. These are the normal typical axillar buds. However old the tree, a protrusion of scar-tissue will always be found at the bifurcation of any old branch which had once been a leaf-axil. The scar-tissue has been produced by this same defect in growth.

Similarly, when root or stem is accidentally wounded, the internal growth-energy may find an unexpected way out. Atypical buds and shoots are formed at such points. If we examine the point of origin of such a bud we shall frequently find that it is really a new manifestation of one of the numerous buds which had been suppressed owing to lack of light and air, and had become grown over.

Even when a fully grown tree is totally cut down, some-

* In fir-trees, where such a groove scarcely ever occurs, and in monocotyledons, where all vascular bundles are more or less parallel and do not penetrate transversely into the branch, the formation of buds does not occur in the majority of axils. The V-shaped entrance of the vascular bundles into the twig is most clearly shown in the horse-chestnut, at the scar, where, during the preceding autumn, a leaf has been shed.

times quite new buds are formed on the cut surface of the cambium, a place where buds had never been before. This is simply due to the fact that the cambium-cells become free and are able to give expression to their growth-energy.

Man, however, has no such simple structure of vascular bundles and no axillar defects. The possibility of regeneration after wounding is very limited. We may be glad if our wounds even heal up. In man, it is solely the sexual reproductive cells which have undertaken the reproduction of the species. They can only do so by swarming out.

8. The abdominal cavity and its muscular wall.

Formerly, it was usually thought that the study of the sexual life had been completed, when reproduction had been correctly explained. That is not so. Reproduction is only one of the phenomena of sexual life, fertilisation is once and for all an exceptional case, and can affect even in the most favourable circumstances only one or two, or at most five, of the countless sperm-cells. The stimulus of sexual pleasure in which all sperm-cells take such an active part is for every adult individual, day and night, a burning question, one of the chief factors of our life-energy. It will be the task of this work to discuss sexual life in this respect and to determine its chain of causality in all its details, to that we shall in future be able consciously to control this impulse better than at present.

In the previous chapters we have considered sexual life primarily as a tissue-formation; from now on it will appear more in its secretory aspect. In the next chapter we shall first discuss the anatomy of the excretory duct system. In order to understand this better, we shall first make a few remarks concerning the abdominal cavity as a container of the excretory organs.

The abdominal cavity contains the three large excretory organs, the bladder in front, the rectum behind, and the genital canal in the middle. The latter, however, differs in the two sexes. In the female the whole genital canal, in the male only its middle portion, including the two seminal vesicles, occupies this position. The beginning and the end of the male genital canal have migrated from the abdominal cavity, the testicles have passed outwards through the anterior wall and the urethra has pierced the lower wall.

These three excretory systems are evacuated towards the exterior by means of peristaltic (progressive) contractions of their membranous muscular walls*. These muscular contractions in the interior of our bodies are imperceptible to us and therefore enter little into our consciousness. Our consciousness would therefore exert but little control over these three excre-

* For different types of muscles, vide glossary at the end under *muscles*.

tory functions, if the three organs were not contained in a common abdominal cavity with moveable walls, as in a sack. Only the orifices in its lower wall remain open.

These moveable walls consist of red muscle-fibres, which, since they can be directly observed on the body surface, are certainly under the command of our consciousness. They are the abdominal muscles which stretch from the ribs to the edge of the pelvis*. When these abdominal muscles are contracted and the abdominal cavity is thereby energetically compressed, contraction will easily be caused in the three internal organs by the increased pressure. This action can, however, only be an indirect one, since the proper evacuative action of the said organs is peristaltic.

The abdominal musculature can, however, under the influence of consciousness greatly stimulate the larger organs bladder and rectum; doubly so when thoracic and abdominal muscles combine to raise the pressure in the body cavity. If in this case the lower body-orifices are closed while the upper orifices remain open, then a deep expiration, e. g. a sigh, will ensue; if on the other hand the upper orifices are closed (or as we say, if we hold our breath) while the lower orifices remain open, then the "abdominal pressure" will act powerfully downwards. The vertebral column is thereby curved, for the anterior body muscles are at the same time its contractor muscles**. Such a powerful increase in pressure will at the same time compress the large venous trunks and produce an extreme venous congestion, shown for instance, in a red or even swollen face.

Up till now we have dealt only with those abdominal muscles which extend from the ribs to the pelvis and which might be considered as the walls of a cylindrical cavity. Superiorly this cavity is roofed over by a dome-shaped muscle which is joined to the internal edge of the ribs. This extensive though thin muscle, the *diaphragm*, acts as a dividing wall between thorax and abdominal cavity or better between thorax and liver. The abdominal cavity is thus closed from above.

But how about the lower end where the floor of the pelvis

* Vide "*pelvis*" at the end of the book.

** In order to inspire deeply, the muscles of the back have to be contracted.

has to be closed? The gluteal muscles are unable to close it since they are attached only to the exterior of the pelvis where they serve to extend the thigh. They overlap everything while we are standing erect. When we are sitting or crouching however, that is when they are not contracted, they lie lateral to the two ischial tuberosities, so that the lower pointed end of the pelvis becomes exposed. Thus four fixed points are easily palpable exteriorly, the ischis laterally, the coccyx posteriorly and the lower margin of the os pubis anteriorly. Here there is an acute angle in which the urethra may be felt as it bends upwards at this point. The small space between these four fixed points is the floor of the pelvis, and is completely filled by a special muscular layer, the perineal musculature. We must attach the greatest importance to this small group of muscles as the endings of the three excretory organs pass right through it.

This muscular layer* does not lie in one plane but arches downwards in the same way as the diaphragm arches upwards. Corresponding to the sack-like form of the abdominal cavity this muscular layer is slightly lower in the middle. The two ischia laterally are somewhat lower than the coccyx at the back, and considerably lower than the pubic bone in front. It is this latter inclination of the floor of the pelvis which causes the upward direction of the penis during erection.

The floor of the abdomen like all other abdominal muscles consists of red muscle-tissue and can contract reflexly as well as voluntarily, very readily. Since, however the mutual mobility of the three pelvic bones to which they are joined has been reduced to zero in the adult, these muscles can no longer be used for movement of the skeleton. They only serve, when necessary, effectively to close the three tubes, like three lock-gates.

In order to reach the exterior these ducts have to pass right through this muscular layer. We may say more correctly, perhaps, that the various muscle-fibres become deposited between the canals. If such a canal is half surrounded on either side, the end result is almost as satisfactory as if it had been surro-

* The movements of these two muscular systems hardly affect the skin surface sufficiently to become conscious. Even in systematic exercises they are for that reason nearly always neglected, in spite of their importance for the internal massage of lungs, heart, and abdominal organs.

unded by a proper sphincter muscle. When they contract, these muscles can greatly interfere with the free outlet of the ducts and may even close them completely, especially if they are employed simultaneously and the whole of the perineal region is thereby raised. I shall, therefore in future designate this muscular layer by the term, "external voluntary occlusive muscles" without specifying every time which particular subgroup of muscles* is specially functional in any given case. Sometimes as we have said, they work all together and then produce the greatest effect.

Generally these muscles act reflexly, i. e. without our thinking of them. We can, however, contract them voluntarily and even deliberately. The latter is only exceptionally required, as the internal involuntary sphincter muscles of the three excretory organs — the true circular muscles — are generally sufficient without the aid of the external closing apparatus.

Every adult knows that the internal involuntary sphincter of the bladder is nearly always adequate to prevent the urine escaping. Only when it is in danger of being overpowered do we, in our apprehension, contract the external voluntary closing muscles.

The same holds good in the passing of faeces. One of my patients once had the external closing muscles completely torn owing to an extremely difficult labour. She, however, refused to have an operation to repair it until all possibility of giving birth to children had passed, as otherwise labour would each time be as difficult as before. This lady, has, however, suffered no inconvenience through it except in cases of threatening diarrhoea.

The double closing musculature of the genital canal will be discussed in greater detail in the following chapter; externally, in both male and female the perineal layer; internally, in the male the sphincter muscles of the seminal vesicles, in the female the muscles of the cervix.

* In textbooks of anatomy these little muscles are provided with pompous names, according to whether they elevate the whole anal region (*M. levator ani*) or only close the ureters (*M. constrictor urethrae*) or interfere with the blood supply (*transversus perinei*, *M. ischio-cavernosus*, *M. bulbo-cavernosus*). In lieu of the latter the female organism has only the *M. constrictor cunni* as sole sphincter muscle for vulva and urethra. It lies in the form of a figure 8 round both canals.

9. The genital canal.

a) The female genital canal.

As we have seen in chapter three the female genital canal is an embryonic elaboration of a rudimentary organ from the dim past, derived from the pronephros.

In the embryo the internal orifice of this canal was not overgrown by the reproductive masses as was the Wolffian body. Even in the adult body it is still situated at some distance from the ovary. It has a funnel-shaped enlargement for the better reception of the ripe ova as soon as they are cast off into the abdominal cavity. The moving protoplasmic threads, like huge cilia, which are situated on the edge of the funnel greatly assist the process.

Thus an egg will sometimes succeed in finding its way into the female genital canal. Whereas in man the two sperm-ducts have to take a circuitous route before they open into the urethra behind the bladder, the two egg-ducts (Fallopian Tubes), in the female organism converge towards the mid-line and coalesce immediately behind the urinary bladder. Eggs are moved on in these ducts by the ciliated epithelium which lines the internal surfaces.

While in the male the two sperm-ducts on approaching each other are each provided with a separate seminal vesicle, the Fallopian Tubes form a single large reservoir*, as soon as they meet, that is to say, after a short distance.

It is of considerable size and consists of red muscle, and is for that reason called *uterus* or *womb* instead of *vesicle*. Here, the egg, even if unfertilised, is kept for some time. It is then, together with the menstrual fluids, squeezed by peristaltic movements into the antechamber, i. e. the vagina, from whence it is able to reach the exterior.

* In the female organism, urinary canal and genital canal are entirely separate, i. e. there is a separation in a coronal section in the male, in a sagittal section in the female. This corresponds to the obstetric dimensions of the pelvis, the male pelvis being more elliptic, the female on the other hand more circular. Only in some few mammals the uterus bicornis points towards a coalescence of the uterus out of two parts as though it were a paired organ.

Only if fertilisation takes place does it remain in this reservoir for several months. The fertilised egg-cell, and later on, the small embryo, surrounded by its special membranes, gradually embeds itself in the moist sero-mucous membrane of the uterus, by which it is then enveloped. After the third month of pregnancy, two stout blood vessels grow from the foetus towards the uterine wall and form the umbilical cord*. The much ramified ends of these vessels known as the *placenta* or *afterbirth*, grow into and through the mucous membrane after the manner of a tumour. By this means an osmotic connection is established between the maternal and the foetal circulations.

The foetus remains *in situ* and grows for a further period of six months**, until muscular contractions of the uterus occur in consequence of increasing tension, which finally lead to the expulsion of the foetus.

In the female genital tract the musculature of the cervix of the uterus is the involuntary internal sphincter whose contractions may often lead to serious obstetric complications. On other occasions, during an unwanted abortion, the embryo is only too easily allowed to escape. Contractions of this group of muscles often cause severe dysmenorrhoea.

The perineal muscle-layer with its external closing apparatus (p. 56) may also offer a protracted resistance during parturition, if a purely expectant attitude is adopted and no measures are taken against such an occurrence. It may, by spasmodic contractions, delay or prevent any attempt at gynaecological examination on the part of the physician. In some very rare cases it may indeed happen that owing to pain or fear, these

* The fact that later on the umbilical cord is spirally twisted is generally attributed to foetal movements and rotations, of which we are reminded by the growth of hair on the vertex. It is perhaps more correct to interpret the rotation of the foetus as a consequence of the torsion of the umbilical cord. A tree or any stem of a plant will grow twisted as soon as the different vascular bundles of which they are composed have a different co-efficient of growth. In the same way, surely, the arteries and veins which together form the stalk have a different co-efficient of growth.

** These periods are, of course, only approximations. The average period of 280 days varies individually and according to external circumstances.

muscles contract spasmodically*, so as to render coitus impossible, or if this cramp occurs during coitus, the male member may thereby be seized so that the man cannot withdraw and venous congestion takes place in the glans. If the man remains quiet and above all makes no attempts at withdrawal, the cramp will generally pass off in most cases. As soon as it is found that the matter is becoming serious one should immediately send for a doctor in order to prevent the glans from becoming gangrenous, for this may end fatally for the man. The physician will narcotise the female with chloroform inhalations or subcutaneous injections of morphia, to cause the cramp to pass. These cases generally happen in young girls.

The total length of the female genital canal is very short, like the female urethra. Neither ovaries nor Fallopian Tubes are much higher than the superior margin of the os pubis. They are really only the lateral appendages of the two upper corners of the uterus. The lower part of the uterus and its lowest point, the *os uteri*, protrude** a little into the vault of the vagina.

It is very remarkable how the uterus, which is normally so small, attains such huge dimensions during pregnancy; and even more remarkable how, once it is completely emptied, its muscular fibres contract uniformly, so that the increase in size which took nine months to develop, disappears almost entirely in six weeks.

The vagina is much corrugated. When these corrugations are distended during tamponade or other such procedures, it becomes obvious that the vagina is really balloon-shaped and can be distended to the size of a child's head. Thus the female genital canal is very well adapted for gestation. Its sensitiveness to pressure is not acute. Only when the uterus is suddenly shaken, the strain will produce an unpleasant sensation, like that of a strangulated hernia.

* During a cramp, even the voluntary muscles are no longer under the control of the will. The opposite condition seen in elderly women who have had several children, where these muscles have ceased to function altogether, is perhaps preferable.

** Sometimes even very deeply. In pathological case it may lead to prolapse of the vagina or even of the *cervix uteri*.

Even quite harmless procedures in the interior of the uterus may sometimes cause sudden death from shock. This is probably due to over-excitation of the sympathetic nervous system small groups of nerve centres scattered in the abdominal cavity, and of which the *solar plexus* (*coeliac plexus*) is the largest. The mucous membrane lining the uterus is very subject to haemorrhages and to bacterial infections consequent on manipulation. This constitutes a serious danger to life since the uterine cavity is directly continuous with the abdominal cavity through the oviducts.

Per contra, the mucous membrane lining the vagina is very resistant to all external infections. The entrance to the vagina in woman* is carefully closed firstly by two small folds of mucous membrane, the *labia minora* or *nymphae*; secondly two larger swelling folds of skin, the *labia majora*. We shall return to this structure which is known as the *vulva* (*pudenda*) later. So, looking at the female body from below, one sees not the vaginal opening but only the vulval slit which is continuous with the natal cleft. The latter contains the anal aperture, the former the vaginal and urethral apertures. These two openings are almost the same size in the female child, but in the adult the vaginal opening is much larger than the urethral.

Between urethra and os pubic there is just space for a small vascular protuberance, the clitoris. We shall see later how in the male these three structures, genital canal, urethra and vascular protuberance, have combined to form a single organ, which is of much larger size.

b) The male genital canal.

The male genital canal was at first formed by the excretory duct system of the Wolffian body, and afterwards by the lower portion of the urethra as well. We have discussed the whole extent of this much contorted canal as far as the seminal vesicles, in chapter 6.

* In other mammals only one pair of folds is found, which, like our eyelids and nostrils and lips, are lined internally with mucous membrane and externally with skin.

From the seminal vesicle a very short and narrow* canal leads downwards on each side to the urethra, the posterior wall of which they pierce close together.

This point where the two seminal canals join the urethra is surrounded by an enlargement, the prostate, about the shape and size of a chestnut. It can be palpated through the anus, in the anterior wall of the rectum.

The function of this organ is unknown. It contains many microscopic unstriped muscle-fibres and many delicate glandular ducts, which open into the urethra, into which they pour a mucous secretion which seems to cause the special odour of semen. Certainly the contents of the seminal vesicles are odourless. It is on account of this secretory function that it is called the prostatic (presiding) gland, although the organ appears more like a rudimentary uterus, just as generally rudiments of the duct-system of the opposite sex are found in each sex. As in the female organism the two oviducts join behind the bladder to form a uterus, so in the male the prostate gland is situated at the posterior wall of the urethra just at the point where the two sperm-ducts join. The prostate is only of importance on account of its proneness to enlargements, tumours, calculi, (similar to gall stones and renal calculi) and chronic inflammations, which often cause constriction of the urethra in elderly men, and render extensive operations necessary.

Immediately below the prostate, the male urethra pierces the perineal muscular layer in order to gain the exterior. This muscular layer, however, is not as yielding as the anterior muscle-layer in the groin through which the testicles migrated. Moreover in the male the opening in the muscular layer is not directed downwards (the shortest way) but slantingly forwards, thus the muscular action is more forcible in the male. As soon as it emerges from the pelvic floor the canal bends upwards along the external surface of the pubic bone (in the erect posture the inferior surface of the pubic bone). It is firmly united to the os pubis by connective tissue, and

* It is significant that the orifices of the two seminal ducts are so very narrow. Those sperm cells which have not been stored in the seminal vesicles are subjected to a sphincter-like elastic resistance when they are ejected together with the complex contents of the seminal vesicles.

emerges finally on the anterior surface of the body, from which it hangs down for more than a finger's length immediately anterior to the scrotum which to a certain extent it hides.

When in the flaccid condition, looked at from the right, the male genital canal from the bladder onwards, describes a double curve like the letter



The os pubis is situated in the first curve. It is this external continuation which, as we shall see in the next chapter, has to function in copulation, and is therefore called penis or male organ. In the same way in woman the lower portion of the genital canal i. e. vagina and vulva, are termed female copulatory organs. But since in the male the latter portion of the genital canal has to serve for the excretion of urine as well, we refer to the urethra when the canal itself is meant as if it only served for the urinary purpose; this even after puberty.

It is extraordinary that while the female canal has widened as much as possible, the male canal (vide page 23) has lengthened as much as possible. Firstly the two sperm-ducts are enormously elongated within and without the abdominal cavity, owing to the descent of the testicles, and at the other end we have the very vascular prolongation at the outlet. Even the seminal vesicles are only elongated narrow structures.

It is extremely remarkable how the male genital canal is related to the abdominal cavity. As far as we are conscious of it, the physiological function of the sexual life has its starting point in the abdominal cavity, but the formation of sperm cells, which is the most important function, takes place outside the abdominal cavity. It is only the secretory function which proceeds from the abdominal cavity, and it is of this function only that we are conscious. So it is not to be wondered at that up to the present the sexual function has been considered as entirely glandular.

Finally we must notice the peculiar way in which the male genital canal pursues its path through the abdominal cavity. From the testicles to the prostate it is paired and passes above the *os pubis*. From thence onward it is unpaired and passes below the *os pubis*. That makes in all three long canals, whose meeting point is situated at the neck of the bladder and which all three protrude for an equal distance outside the body. So it happens that the two sites of formation of the sperm-cells

and the site of their ejection are quite close together. And yet this small journey of the sperm-cells touches all hearts and supplies the magic by which Nature rules the whole world, as Schiller says so succinctly in "*Die Weltweisen*" (*The Worldly Wise*).

Until the world is guided entirely by philosophy,
it will be driven by hunger and by love.

We shall discover in the further course of this book how this mystery is brought about.

10. The lower portion of the genital canal as a copulatory organ:

With reference to the female we saw in the preceding chapter that the lower portion of the genital canal simply becomes dilated to form a copulatory organ. This dilatation is regulated by corrugations and occlusory muscles. In the next few chapters we shall discuss the formation of the male copulatory organ in full detail. A certain essential prolongation we have already mentioned. We now come to the phenomena of congestion by means of which this otherwise most insignificant organ is temporarily enabled to serve as a copulatory organ.

Every organ receives an increase in blood supply when it is functioning actively, and conversely an increased blood supply is an indispensable condition for active functioning. This interdependence is a biological law of the first importance also in the sexual life. This most urgent of all functions requires a hyper-congestion. We shall now examine the anatomical mechanism by which the lower portion of the male genital tract is enabled to become hyper-congested.

It goes without saying that the wall of the urethra contains blood vessels, for there are no organs without them. At the point where the urethra pierces the muscular layer of the perineum, these blood vessels must naturally experience the pressure of this muscular layer. The blood in the arteries, which have muscular walls, will not be much affected by this, but the blood in the wide veins, which have flaccid walls, will be greatly congested by this pressure. So it is evident that in the evolution of higher animal orders a plexus of swollen and enlarged vessels was necessarily formed. This tissue is known as *cavernous* tissue and is also found as a vascular swelling on the heads of many fowls, e. g. the comb of cocks. The vascular congestion in the urethral wall commences at the point where the canal pierces the perineal muscles. Below the prostate and above the muscular layer lies a small portion of the urethra, and here there is no cavernous tissue, but from the muscular layer downwards the whole urethral wall is formed of such cavernous tissue. It is a prolongation and thickening

of the urethral wall with its connective tissue and not of the skin. Only on the lower aspect (while pendulous this is the posterior aspect) of the penis, the urethral canal may be easily palpated in its entire length.

In the female, the same conditions prevail, though on a smaller scale. Here, too, the opening of the urethra with its vascular system is situated beyond the external occlusory muscles (vide footnote page 56).

Here a similar congestive effect is produced but only on the anterior aspect of the urethra, as the vagina is situated at its posterior aspect. Thus immediately in front of the urethra, i.e. between urethra and os pubis, a cavernous *papilla* has formed about the size of a pea, in appearance somewhat like the glans penis. It does not, however, enclose the urethra. In the female Mole, however, the urethra pierces the clitoris, as it does the penis in the male.

The local prolongation and thickening would in themselves be insignificant. It is, however, a typical vascular plexus, as even from childhood the penis is constantly changing its dimensions proportionately to the local blood pressure. During cold or after loss of blood it is very small; under the influence of blood congestion or skin stimuli it is, however, considerably larger. But only after puberty, (every time some sexual stimulus occurs), this phenomenon reaches its height and becomes then of considerable biological significance, as it not only increases sexual desire, but also forces it upon our consciousness. We remarked a similar case supra (page 14) concerning the descent of the testes. In such moments when sexual desire bursts into flame it appears as if all our energy had concentrated at this extreme point, in the same way as a Leyden jar seeks to discharge itself at its extremity.

We imagine that this phenomenon is the real starting point and origin of our sexual life. If this were so, then there would be but little sexual life in fishes, amphibia and birds, and the sexual life of the female would be specially insignificant. The actual importance of this phenomenon however we shall be able to discuss only in part II. For the present we have to consider the anatomical reasons which enables this excessive blood congestion to take place.

The whole arrangement of the blood vessels in this organ
Rutgers, Sexual life. A-M 67.

greatly favours congestion. Nearly everywhere else in our body we find two veins to one artery. This is what we should expect, for blood flows quickly in the arteries but very sluggishly in the veins. But here on the superior aspect of the penis (anterior in the flaccid condition) there is only one vein to two arteries. This explains why even at a very tender age this organ is so prone to swellings and congestions. I have often seen a child born with an erected penis when too much pressure is exerted on the body to deliver an aftercoming head.

In the adult however the condition is much more marked. The originally soft connective tissue stroma of the cavernous bodies has become a strong network of very firm fibres and trabeculae*, surrounded by a capsule of fairly strong connective tissue pierced transversely by blood vessels.

If in the adult congestion occurs in this vascular system in consequence of hyper-tension in the full seminal vesicles, or of some other even insignificant cause, i. e., if more arterial blood than usual flows in, causing an increase in local blood pressure, all the connective tissue fibres are rendered taut and many of the thin-walled veins are then almost completely constricted. The more blood that flows in at high pressure through the arteries, the more the venous return will be impeded. The whole organ will then become extremely hard and swell almost to bursting point.

This mechanism is considerably augmented and maintained by the perineal muscles, the external occlusory muscles, which, evolutionally, were probably the cause of the development of this cavernous tissue. This muscular layer impedes venous return to a certain extent by its normal muscle tone, but it does so far more when it contracts actively. As long as no congestion is present and the vascular system is relatively empty, this muscular layer cannot produce an erection, since it is not a proper sphincter muscle. If however, slight congestion occurs, e. g., through a stimulation of the seminal vesicles, then this muscular layer can act very energetically**.

* In the dog and some other mammals a few of these trabeculae are cartilaginous.

** The extent to which a complete male erection depends on the contraction of the external occlusory muscles can easily be observed on one's own sphincter ani.

When complete erection has occurred in the male, another very striking phenomenon may occasionally be observed to take place at short intervals. This is a throbbing movement — a convulsion — which is not due to the pulsations of the heart, for which it is far too infrequent, but is produced by the convulsive contraction of the perineal muscles. When erection occurs, one can produce these throbbing movements by a strong, voluntary contraction of these muscles.

During such throbbing movements only a very slight increase in circumference is experienced, together with a slight shortening of the penis. In mechanical parlance there is a tendency towards assuming a spherical shape.

Generally an erection is not of long duration. After a few minutes or more the blood pressure subsides and everything returns to its original condition, as though nothing had happened.

If, during the flaccid condition, the same abrupt muscular contractions are performed with a view to producing an erection artificially and of set purpose, failure will result, for the "*conditio sine qua non*", the congestive condition, is absent. And if one should try to produce a voluntary erection by mechanical compression, it would be extremely difficult to avoid compressing the arteries as well as the veins, thus favouring local anaemia, quite apart from the inhibiting action of pain.

The occurrence of an erection is thus not altogether under our control; it is a phenomenon by which we are often overtaken in the most awkward circumstances, and which may remain absent just when it is required. One should however only talk of impotence, when in an adult erections do not occur at all. Thus in practice the question arises how consciously to control the first congestive condition of stimulation, both to cause and to prevent it. We can answer this only in parts II and III.

It is fortunate that the external voluntary occlusive muscles, not being proper sphincters, are unable totally to cut off venous return, and can only aid in producing congestion. If it were possible to cut off the venous return altogether gangrene would supervene, for the tissue would necessarily die if the blood supply were interrupted. This fact would, secondarily, endanger the individual's life itself.

The extent of the interference with the venous return and

of the tension may be gathered from scars sometimes found in post-mortems, which can only be explained on the assumption that during life the cavernous bodies must have become fractured internally, possibly through a fall or blow, like a stick of sealing wax.

There are exceptional cases on record of pathological erections (*priapism*). In such cases one should try all the measures suggested in part 3. In severe cases a physician should be consulted.

The volume of the penis in the erect condition is on an average four or five times as large as the original volume. During the greatest tension its length from the os pubis is about $1\frac{1}{2}$ fingers length instead of 1 in the flaccid condition, and the width about 2 fingers breadth instead of $1\frac{1}{2}$. And yet this is only the visible external part. The internal part of the erection is curved round the os pubis and hidden between the thighs and behind the scrotum.

Such a condition of erection and throbbing produces in us a warm feeling of glow and pulsation. The skin of the penis, wherever it is moveable, retains its normal yellowish red flesh tint. For it is not a skin congestion but a congestion in the urethral wall. Only on the glans, where as we shall see the skin is transparent and close fitting, the colour changes from pale red or livid to the deepest blue of venous blood, the latter especially round the margin of the glans.

Such a considerable swelling must, of course, have an influence on the position of the whole organ. If the investing membrane of the penis were not firm, then the whole organ would assume as far as possible a spherical shape during the period of maximum tension because that shape alone would equalise the tension at all points. But the membrane is tubular and can therefore only increase in length and thickness, and so must change its position. In the previous chapter we saw that the whole organ bends upwards at the external surface of the os pubis to which it is closely attached by connective tissue. This portion of the penis which is not visible externally can therefore not change its position. In order to yield as far as possible to the internal pressure the pendulous portion which is visible, must alter its position so as to be in the same line

as the fixed portion. It therefore raises itself up, and then the tension is as nearly as possible equal at all points. Hence the name erection, i. e. raising up.

Gravity, however, that is to say the weight of such a large volume of blood, will have considerable modifying effect. In every attitude of the body the direction of erection will be the resultant of these two forces, blood pressure and gravity, and the effect of the convulsive contractions of the perineal muscles will be to compensate or on account of the throbbings even to overcompensate the effect of gravity. When the body is vertical the penis will be much above the horizontal. If we eliminate the action of gravity in this direction by lying down on one side the penis will almost touch the abdominal wall. An infantile erection however with its small increase in blood pressure will have reached its maximum when the small penis makes an angle of 90 deg. with the abdominal wall. That is probably the extreme as I once discovered. A mother had for some reason to take her son aged 5 or 6 out of bed while he was fast asleep. The above mentioned attitude was visible. She was greatly embarrassed by it and tried several times to press it down. This of course could only have increased the erection but it remained at the same angle which seems to be the maximum for children, though it is the minimum in the adult. The internal tension and the external increase in bulk are very slight in children.

Above we have advanced the hypothesis that during evolution of the species a vascular plexus developed owing to the congestive effect of the perineal muscles. We shall now enquire further why this vascular plexus grew forward along the os pubis. The tubular form of course is due to the fact that it is a prolongation of the urethra. It is a matter of experience in mechanics that if a tube of complicated form is subjected to very high internal pressure, it will assume as far as possible its original shape, since every deviation from this form may reduce, but can never increase its capacity. Similarly, our joints will assume the semi-flexed attitude of their intra-uterine life, if they are subjected to high internal pressure by effusion of blood, pus, or serum. Here, I think, the case is similar. In the foetal condition, curled up in the uterus with the legs pressed tightly together, the continuation of the urethra

could not escape caudally, but could only grow along the abdominal wall.*

During normal pregnancy, while the foetus lies head downwards owing to gravity, the penis can only grow downwards towards the head. Only when the child begins to walk does the penis begin to point towards the feet.

Later on, in adult life, every time congestion occurs, the tubular must assume as far as possible its original position, quite aside from the fact that it is fixed to the os pubis by connective tissue. In young children, in spite of the small increase in blood pressure, the erect position of the penis is easily assumed because recently that position was habitual. Thus, a childish erection has nothing sexual about it. The genitals of the child are really only foetal developments of an otherwise embryonic rudiment, so erections in children should not be considered as evidences of precocious sexuality, but merely as a return to a foetal position due to blood pressure. We shall further see, in part 5, that the childish sexual character does not develop on account of an internal sexual need, but simply because the child develops in a sexual world. This does not mean to imply that the formation of the sexual organochemical substances may not sometimes commence in the pre-puberal period.

Only after puberty, the spasmodic increase in blood pressure which we know as the sexual erection reaches its full development, together with the mature stimulus of the sexual organochemical substances and the associated mass-production of reproductive cells. As we have seen above, the male genital canal, when flaccid, assumed the form of an S lying on its side, thus —



When erect and seen from the right. It has the form of the Greek letter



* In some animals, e. g., the bull, the penis, even in adult life, grows along the abdomen for some distance before becoming visible. Vide also footnote, page 12.

The path of the sperm-cells begins at the lower part of the letter (i. e., at the testes), travels upwards towards the abdominal cavity, enters it, describes a circle there (surrounding the os pubis) and finally travels upwards again at the external surface of the os pubis, where it finds exit. This remarkable phenomenon, erection, with its congestion and feeling of tension, has always stimulated man's emotions.

In all savage races, the first complete erection is always greeted with joy. Now, for the first time, the youth is considered fit to take his place as an adult and is permitted to take part in the chase and in battle. During initiation, he must prove his manhood by suffering without flinching all sorts of ordeals, e. g., tattooing, skin incisions, circumcision, introduction of rings into nose or ear, knocking out of teeth, etc.

In our civilisation and with our clothing, there is no proper appreciation of this developmental phenomenon. It must, unfortunately, be concealed. This concealment spoils our character. Our tight-fitting clothes* give an oblique direction to the penis, which in fact diminishes its usefulness for copulation. Why should not our clothes be made a little looser and why do we not "dress" one day on the right side and the next on the left.

With us Christians those pagan celebrations of puberty are sublimated as Confirmation, when we are received as members worthy of reception into the Church. And why should we deny, or even proscribe, the sexual element in it? As regards stability of character and sexual life, the savage races can teach us a good deal.

* The nipples of women are often deliberately rendered almost useless by close-fitting garments.

11. Glans and prepuce.

We have not finished yet. On careful examination, we find that the male organ, the prolongation of the urethra, with its cavernous walls, is not a simple canal like a rubber tube, for at its end it bears a small head, the glans. This head is conical in shape, but oblique in the sense that only the inferior or posterior surface is not pointed. On this aspect, the urethra may be palpated as it pursues its straight course. (Vide page 65.) The base of this head has a larger circumference than the penis at any other point and bulges considerably at the point of junction, like a circular swelling. This provision is very important for the movements in coitus firstly as an aid to massage, secondly in view of the external occlusory muscles of the vagina which grip it and prevent its slipping out too easily. In dogs and some related species, such an occurrence is utterly impossible, as this edge is cartilaginous, so that forcible attempts at separation would probably tear the vulva.

The glans is covered by a very delicate transparent membrane, with the typical appearance of a mucous membrane, which merges insensibly into the mucous membrane of the urethra. Internally, the glans consists of the same cavernous tissue as the inferior or posterior surface of the penis, where the urethra may be palpated. It is therefore not so stony hard as the rest of the penis, even when swollen. This is very fortunate, for otherwise the first attempt at copulation might often result in damage to the urethra and bladder, or perforation of the vaginal wall.

In the flaccid condition, however, the glans is not very noticeable, of small dimensions and not conspicuously different from the cylindrical portion of the penis. There is one more point to note. It is due to the nature of the cavernous tissue that the penis varies so greatly in size with the blood pressure. Sometimes, it is very large; at others, especially during excessive cold or after loss of blood, it may become extremely small. But how about the skin? Is it tight, almost to bursting, at one time, and at others almost inconveniently wrinkled? One need only think of the voluminous folds of a bellows or a camera.

Nothing of this sort is found in the penis. Nature shames our machines with her simple devices.

Her solution of the problem is so simple that scarcely anybody has realised its difficulty. The skin lies nearly always smoothly disposed round the penis. The temporary surplus is taken up at either end. The skin of the scrotum can be wrinkled in the finest corrugations, like the most delicate crêpe paper, by minute muscular fibres*, and during erection these fine wrinkles are to some extent smoothed out. As soon as the penis returns to its usual size, the scrotal wrinkles reappear. Sometimes, when the muscles are quite relaxed, the scrotum may hang lower than the penis. When the penis is fully erect, the scrotum disappears altogether, and the two testicles lie close against the penis. Thus the same portion of skin may be used for both organs. One should remember the remarkable origin of these two organs. Developmentally, both the double testicular hernia and the vascular plexus of the urethra have penetrated into a loose fold of skin. It is not to be wondered at, therefore, that this portion of skin is still available for both organs.

At the other end of the penis, however, i. e., on the glans, the skin has lost its mobility, but as recompense we find, at the margin of the glans, just behind its projecting rim, a single large fold which is large enough to hide the whole glans. In this case, the fold of skin is a double one. Urine, after leaving the end of the urethra, must pass through this fold of skin (the prepuce**) before it actually reaches the exterior. In small children especially, this fold of skin forms a flaccid narrow tube and forms overlapping wrinkles. In the child, the glans is quite hidden. The nearer one approaches puberty, the more the glans appears. For this reason the term *Eichel* (= acorn, c. f. English, nut) is appropriate, because the fruit of the oak is quite hidden while immature, but later the large, smooth acorn protrudes markedly.

* In the female these fine muscular fibres are situated deeply in the skin of the labia majora.

** When this fold of skin is removed at circumcision, it becomes obvious that it is ring shaped. The way in which the fold is disposed may easily be represented by partially pulling off a finger stall, and leaving the point still on the finger.

In the erect position the glans is most exposed, and the fold of skin disappears almost entirely. In a very flaccid condition however due to cold, loss of blood, or age, the prepuce entirely surrounds the glans, as though to protect it.

In the female the clitoris is similarly supplied with a prepuce. The little protrusion known as the clitoris is not however quite covered by it. Here the foreskin is a very small fold of mucous membrane which hides about half the clitoris on its anterior (in the supine position the superior) aspect. On either side the fold merges into the two small folds of mucous membrane known as the *nymphae*. Covering all this are the *labia majora* which merge posteriorly into the buttocks so that in the adult they appear to be an anterior hirsute prolongation of them.

If we compare the two sexes in this respect we shall see that the female form with its freedom from protuberances is more closely related to the original type common to both sexes.

However, even in the female, protuberances are sometimes found, especially prolongations of one or both of the *nymphae*. In exceptional cases, prolapse may bring about a prolongation of the female urethra. I once found extroversion of the urethra in a female to such an extent that it resembled an enormously elongated clitoris.

A great enlargement of the clitoris is said to be frequent in certain lands. This is a form of rivalry the male does not seem to appreciate, for in many tribes* there prevails the custom of shortening or amputating the clitoris by operation.

On the other hand there are tribes who by means of sucking or stings of insects aim at enlarging the clitoris as far as possible. Here and there attempts are made and with some success, artificially to lengthen the *labia minora* by pulling on them or suspending weights from them, (cf. Hottentot aprons obtained by this means).

Generally, however, prolongations are reserved for the male sex. In the male, through natural selection the prolongation

* For a small penis to occur in females it would be necessary for both clitoris and urethra to be greatly enlarged and to coalesce. This would be the female equivalent of hermaphrodite-formation in males.

and swelling of the genital canal has become a normal phenomenon, because of its great advantages in the struggle for existence.

In the female on the other hand it has become a rare exception.

The enlargement of the male copulatory organ has gradually accommodated itself to the female dilatation, and vice versa.

Not only the mental characteristics, but physical conformations as well have become mutually adapted in man and woman. Matter has far more inertia than spirit and so bodily adaptation in prehistoric times has taken much longer.

12. Circumcision.

This is an operation which is often required in males during early childhood in consequence of the smallness of the aperture in the above-mentioned fold of skin, which tends to impede the excretion of urine. Lack of hygiene is often the first cause.

The secretions of the sebaceous glands of the skin of the glans and the prepuce are very difficult to remove, especially during childhood, on account of their hidden position between prepuce and glans. The fatty constituents are apt to become rancid and to decompose, a process which, in the small child, is favoured by the fact that the decomposing urine acts as an irritant. Lesions of the skin by small, almost unnoticeable, erosions and excoriations, frequently supervene. If such tears and lesions should heal up with contraction of the scar-tissue, then the external urinary orifice, i. e., the above-mentioned fold of skin, will diminish more and more in lumen, instead of increasing in proportion to the growth of the body. Finally, urine may be unable to pass through and an operation becomes necessary. The contraction of the lumen may become so severe that during each act of micturition the whole foreskin becomes distended by the urine like a balloon, a most painful process.

As long as the contraction has not proceeded too far, one can always, before having recourse to an operation, thoroughly clean, disinfect and heal up the nearly closed space between prepuce and glans, by injecting a suitable fluid into the cavity. One should choose non-irritant and preferably astringent anti-septic lotions, e. g., lead water (Goulard's water) or a one per cent, solution of alum (one tablespoonful of alum to two pints of water). The injections are best performed with a bulbous syringe, having the canula slightly enlarged at its end. By introducing such a syringe between prepuce and glans and grasping the folds of skin round it with the hand, one can use the same liquid several times by injecting it between the prepuce and glans and letting it run back into the syringe. The action of the fluid may be reinforced by external massage. By this means, one may effectively clear the cavity; of course, one should avoid making fresh erosions.

Such local cleansing is all the more important because the collected dirt is liable to cause burning and itching, a fact which is possibly one of the most prequent causes of masturbation in children.

If the trouble has, however, gone too far, an operation, will, in the end, be indispensable. The surgeon generally performs the operation as a real circumcison, by removing a circular portion, similar to the ritual circumcision among the Jews for if the preputial ring is split lengthwise with the scissors, the desired widening of the lumen is at once obtained, but later on it will most likely grow together again in spite of any attempts to avoid it.

Circumcision is of great value as a surgical measure in pathological cases. It has a wide distribution ethnographically, as a religious ceremony among several tribes and races. Frequently it is devoid of any religious significance and is employed mainly as a means of beautifying or improving nature. We have mentioned some of the ceremonies of puberty above (page 70.)

In Australia there are some aboriginal tribes who go even further. I refer to the operation at puberty which is called *mica* by them. With a splinter of flint or shell they split the whole urethra lengthwise at the inferior (in the pendulous position, the posterior) aspect, where the canal may be palpated. While the wound is healing, a piece of tree-bark, or wood, or ivory is inserted to prevent the whole of the cut from healing. In future, the penis is double the usual width, urine and semen are voided immediately at the peno-scrotal angle and all copulations will be sterile*. Generally men operated on in this way are preferred as husbands. A provision however is generally made that a few men are not operated on, who are capable of producing a healthy progeny, wherever it appears desirable.

There are also tribes who only split the glans, which thereby acquires double its normal width.

* In such people it is impossible at the moment of ejaculation, for the sperm to be deposited in the urinary bladder, through accidental or intentional compression of the urethra, instead of being ejected towards the exterior. Sexual pleasure is not interfered with thereby, but it may easily happen that such particles of sperm, as well as blood- and pus-clots, may be the nucleus of vesical calculi.

The ordinary circumcision of boys as a rite of puberty is not contrary to nature, as nature herself exposes the glans as puberty approaches. It must have been a device originally to help nature a little. An entirely uncovered glans was considered a sign of fertility and in Genesis XVII the promise of a numerous progeny is bound up with ritual circumcision.

Since from the earliest days each tribe or race had its own peculiar customs, such traditional ceremonies became in time sacred signs of tribe relationship. Finally such marks were as indispensable to every member of the tribe for defining his rights, as with us is the entry of our names at the registry office. It is therefore not to be wondered at that some of these ceremonies were performed soon after birth. Among the Jews circumcision was performed on the day after birth as a ceremonial reception into the tribe. In Christians baptism was performed at first only on adults, and latter on shortly after birth, as a solemn ceremony of admission into the Christian community.

The ritual circumcision, the sanguinary sacrifice of one of the most intimate parts of the body, reminds us of the human sacrifice which in the history of evolution lies even further back.

The covenant with Abraham (Genesis XXII) comprised the prohibition of human sacrifice on the one hand, and on the other the obligation of circumcising all newly born sons. (Genesis XVII.) From then onwards all male members of the tribe were sacrificed in this symbolical way.

The deeper relationship between circumcision and an actual human sacrifice becomes more obvious when we remember that in an ordinary burnt offering always only a portion*, the most important portion, was sacrificed to the god.

The remainder was eaten by the other guests actually present as blood relations of the father. Only later on, the priests, as originators of the sanguinary ceremony, claimed the lion's share.

The sacrifice of circumcision, was, as previously the human sacrifice, considered as a redeeming alliance with the Godhead, originally not so much for redeeming the circumcised himself

* Obviously the genitals are here considered the most important life organ and the connecting link to the father.

but rather the blood relations who participated in the ceremony. The latter aim is very clearly expressed in Exodus IV 24—26 when we read that after the slavery in Egypt the old covenant of Jahweh was renewed with Moses. I am referring to the hitherto little understood history of Zippora, where circumcision is a sanguinary sacrifice for the purpose of appeasing the anger of the Lord. By this somewhat hastily arranged ceremony Jahweh, as partner in the sacrifice, became the blood relation of Moses and thereby (vide group marriage chapter 45) joint bridegroom of his wife Zippora.

The history of Zippora, this mystical change from abject fear of death to the most intimate community, has become the prototype later on for the Christian doctrine of absolution. As a corner-stone of the old church-dogma, the ceremony of circumcision, this remnant of the human sacrifice, was then further sublimated, in that one divine being only was sacrificed to redeem *all* members of the faith, now living and to come, who, in the holy communion, symbolically celebrate the sanguinary covenant, the sacrificial meal. Nowadays it has become more and more a communion, of spirit, but originally it was a communion of blood. Circumcision was therefore abandoned as a ceremony of admission by the Christian community and replaced by baptism.

While performing circumcision according to rule, the rabbi endeavours to produce as large an erection of the small penis as possible, while murmuring prayers and formulae. This is a necessary proceeding as otherwise he could not be sure where the glans commences. If by mischance a portion of it should be removed, death through haemorrhage would almost certainly ensue.

By drawing the prepuce towards him, he then cuts it off without damaging the glans. The latter he avoids by grasping the prepuce as close to the glans as possible with a forceps and by cutting along it. The glans is then further exposed and the whole bandaged, aseptically or better antiseptically, e. g. with *iodoform* gauze. In a few days' time the skin cut will have healed up.

There will be no loose fold of skin enveloping the glans. There will, however, be sufficient skin for an adult erection since only the outer portion of the foreskin which protrudes

beyond the glans has been removed. The remainder will fold itself behind the margin of the glans.

The erection produced so soon after birth in all boys, and the permanent uncovering of the glans, whereby it is to a far greater extent exposed to touch, friction, and stimulus, together with a frugal and domesticated life, must have contributed very largely to the great increase and wide distribution of the Jews. In those days, when a high birthrate was a condition of existence on account of wars and as compensation for the high infantile mortality, they became by this means victorious in the struggle for existence. The prophecies linked up with circumcision have thus come true.

Circumcision entails other hygienic advantages of great importance in the struggle for existence. After this operation the collection of dirt in the preputial cavity is entirely impossible, for it no longer exists. It can therefore never become the site of venereal and other, diseases, which always menace the existence of the race. On the contrary the skin of the glans will now always be dry, a fact which ensures an adequate resistance against all harmful influences. May this serve as a warning for uncircumcised individuals to endeavour to obtain by cleanliness the advantages they have missed through not having had this operation performed.

In order to show the importance of this point in the hygiene of the race, I shall, as a practising physician, add a chapter on hygiene.

13. *The Hygiene of the external genitals.*

To conclude these chapters dealing with the anatomy of the genital canal, I shall add a few remarks which refer more specially to the external orifices of the copulatory organs, keeping in view the micro-organisms to be found there.

It is a well known fact in bacteriology that all secretions are at first sterile, but later on when reaching the exterior are invaded by all kinds of micro-organisms, among which putrefactive bacteria are to be found. If no steps are taken against them they rapidly increase and betray their presence by evil smells. We should very soon be living in a poisonous atmosphere, and indeed our body would begin to decay before we had died, if we did not counteract this tendency as far as possible by the most punctilious cleanliness. Nature very energetically assists this process from the interior by always pushing out sterile secretions*, which cause the other and already decaying secretions to be pushed further out.

This latter principle, the automatic cleansing by the "*vis-a-tergo*" at once elucidates the fact that people with a vigorous metabolism are so much healthier and more active, while sluggish torpid constitutions are vulnerable, unhealthy, and, when ill, are difficult to cure. Thus, by impeding the urine-excretion, especially in paralysis of the bladder, decomposition of the stagnating urine, which is bound to occur sooner or later, may make the patient most seriously ill.

The same applies to the intestinal secretion, a mixture of all sorts of originally sterile glandular secretions, with the always non-sterile waste products of our food. Here the *B. coli* predominates, which regularly infects our wounds, as it is nearly always to be found on the door handles etc., of the privy and is thus carried everywhere, as has been experimentally demonstrated.

The danger of auto-infection owing to insufficient *vis-a-tergo* applies least to the sperm secretion, because the urethra is thoroughly cleaned several times daily through urine

* Similar to the secretion of sperm cells page 40.

Rutgers, Sexual life. A-M 67.

excretion*. This does not mean to imply that a correct and regular exercise of the function such as is proper to married people is not also a hygienic desideratum in this respect. One should remember the remark made above (page 61) that the contents of the seminal vesicles are always odorless, but acquire an unpleasant smell when passing the prostate gland. In the female genital canal the cervix is usually the limit of self cleansing.

While this process of automatic cleansing is very useful, it still remains our duty to remove the secreted substances from the exterior by thorough washing. This applies to the whole surface of our skin with its countless microscopic sweat and sebaceous glands. If the ablutions are not performed regularly every day it soon becomes very difficult to make good the omission.

The thorough cleansing of a neglected skin surface is not at all easy. Firstly a layer of air adheres to the skin, which on simple immersion shows itself in the presence of countless little bubbles. Secondly the skin is impregnated with the fat produced by the sebaceous glands, and this is always difficult to remove. The best methods are soapy water, hot water, lysol water e.g. 0.5% solution, i. e. $\frac{1}{2}$ tablespoon of lysol to two pints of water) or alcohol**. One should always aim at removing the last traces of soap with an excess of clean water or with a little alcohol, since every remainder of soap is injurious on account of its caustic action, especially in tender regions.

Finally it is very difficult to dry the skin again once it is wet, as it is hygroscopic; one should think of the *hair-hygroscope* in this connection. If the skin is not properly dried then all ablutions only tend to favour decay and decomposition, especially on the folds of the skin. Where two portions of

* This natural aseptic irrigation, comparable to the best surgical irrigation, is absent in the female. On the contrary, the female genital canal becomes much wider towards its external opening, so that the female easily suffers from *fluor albus* after even the most harmless infections, whereas the male genital canal will suppurate only after a virulent gonorrheal infection.

** However injurious alcohol may be, when taken internally, it is of the greatest value from the hygienic point of view, and also in inflammatory processes, especially in moist skin eruptions, where one aims at repelling the leucocytes.

skin lie in close contact, they become increasingly moist under normal body temperature and evaporation from the skin. One can easily convince oneself of the truth of this in summer by sleeping for a few minutes with the face on the back of the hand or on the arm. Both surfaces will soon become moist. One should not dress after a bath until all folds have become thoroughly dry again. Sometimes one may assist this process a little with powder, because then the surfaces cannot lie in intimate contact with each other. In most cases the dust derived from the towels and our clothing is sufficient for this purpose, a fact which should console us for wearing out our clothing. As in contrast to the skin the mucous membranes should remain moist, we should aim at keeping these dust particles out of our respiratory organs; especially at night, when we go to bed, we should avoid raising dust with our clothing, which we would then breathe throughout the night. I have often seen midwives grossly injure the lungs of newly born children immediately after birth by wielding their powder puff in the inguinal region.

As long as it is only the secretion which is decomposing, thorough washing may still be sufficient. In time, however, the decomposition increases in extent and attacks the underlying skin especially in moist situations, e. g. one should recall the feet, where the skin may decay between the toes until the physician may find the whole sole macerated and decayed, and with a smell as of carrion. It may happen thus in all folds of the body. Ablutions alone are no longer sufficient, and the skin has first of all to be thoroughly disinfected. The above-mentioned solution of lysol which is not very poisonous, is eminently suited for this purpose. For smaller surfaces of skin the poisonous *sublimite* may be used, e. g. a tablet of one gram (15 grains) to two litres (4 pints) of water, or if the smell is very pronounced one should use formalin, e. g. 10 gm. (one small tablespoonful) dissolved in half a litre (one pint) of water. The latter solution is painful however, if the skin is sore or has even minute excoriations and tears. For injections, far more dilute solutions should be used.

All that has been said applies to the whole skin surface, but most particularly to the lower part of our body, where besides the small glands of the skin and mucous membrane,

the large excretory organs have their orifices. Here are found the most pungent odours; one need only think of musk, castoreum, hyraceum, ambar, civet in the animal kingdom. Similar malodorous substances are not wanting in our own male and female genital organs. They are found especially where small wrinkles most easily produce a stagnation of secretions, i. e. in the vulva, the prostate and, last though not least, in the preputial cavity.

It is difficult to reach the prostate, and to this is probably due the fact that in advanced age operations are so often required. For vulva and vagina, injections of water or preferably mildly astringent or disinfecting solutions, are required. This is especially important after menstruation, even in young girls. By this means not only all auto-intoxications but also later on all external infections may be counteracted. With reference to the preputial cavity I will once more recall the anatomical structure.

One is only too inclined to consider the preputial cavity as lined with mucous membrane. We have however shown above that the glans is covered with skin, and that the foreskin is a real fold of skin, as the name indicates. In contrast to the mucous membranes these two surfaces should be kept as dry as possible because the danger of infections diseases is considerably reduced, as the skin becomes firmer and more resistant the drier it is kept.

It may easily happen that one may be exposed to the danger of infection. We live in a society where danger of infection threatens us from all sides, in hotels, in strange beds, strange W. C's. It is not even necessary to leave one's family for that. How many infants are infected by servant-girls and midwives, and vice versa, parents by children, etc.

In the most faithful marriage and with the highest moral standards, cleanliness and sexual hygiene should be strictly practised, so that it may not be said to our detriment that the children of darkness are more sensible than the children of light. It might finally ensue that in extra-marital relations, hygiene would be more insured than in marriage. One does not find venereal disease only among prostitutes and drunkards, where it is always present. We physicians often see behind the scenes how frequently venereal

disease is brought into the marriage as a *dot* or is later on brought in by husband or wife. The evil has so often scaled the walls of the old fortress, marriage, where one thought oneself safe.

If one or both partners are ill with venereal disease sexual abstinence becomes a duty, but for how long? Even the most experienced doctor is unable to answer this. In such desperate cases the physician will order the use of contraceptives (condoms) as a protection, in order to act in accordance with his responsibility. They act better than the prepuce, which is nature's safeguard. It will also be his sacred duty to teach the uses of antiseptic precautions to the two partners.

Everybody should be educated on hygienic lines from childhood onward. Then he will spontaneously avoid the unclean. And if he should get into danger, he will not go under helplessly. A careful conscientious education during childhood is the first step towards self-control with which we shall deal in parts II and III, and towards ideal love, with which we shall deal in parts IV and V. As the warning written at the Waldhüsli on the Zurichberg so well expresses it

Rein d'raussen, rein d'rinn

Rein die Rede, rein der Sinn.

(Clean without and clean within, clean your speech and pure your mind.)

II.

PHYSIOLOGICAL SECTION.

14. *Introduction.*

After having discussed the anatomy of the sexual apparatus in full detail, we shall now proceed to demonstrate the physiological functions of the sexual life.

The sexual function proper, namely the formation of single cells by reduction division, provoked by the stimulative action of organochemical substances derived chiefly from the testes or ovaries, has been indicated in chapter 5, and will be considered in its developmental significance in chapter 40.

Here we shall deal from a more individual point of view with the further progress of the newly formed cells, i. e. the manner in which they are excreted from our body*.

We cannot however, fully understand this secretory function until we study it in comparison with the other two secretory functions of the lower pole of the body, the intestinal function and even more the secretion of urine. Only thus can we fully appreciate the whole inter-relation; and difficult questions concerning one function may find a surprising solution by analogy with one of the other functions.

The close relationship between these three excretory processes has up to now been very little considered. Especially of recent years some medical men specialise in intestinal diseases, others in bladder and kidney diseases, others again in venereal diseases, and so on. Certainly this division of labor has resulted in wonderful advances. But this discussion makes it easy to lose the connecting thread, and it is the highest task of science to trace the inner connection of all phenomena.

The connection between the three above-mentioned functions is obvious. Not only do the three organs lie close together, but they are supplied by related blood-vessels, innervated by related nerve-trunks and affected by the same external influences. Stimuli, drugs and poisons, which affect one of these organs,

* For the race the formation of the single cells is the main point. Individually however, we are chiefly concerned with the secretory function. This is a physiological reason, in addition to the anatomical one mentioned on page 21, why testes and ovaries have always been considered as glands, whereas they are in reality tumors, connected with an excretory duct system.

generally influence the other two to a greater or less extent in the same sense. The secretory character of the three organs is identical, and it is one and the same layer of muscle, the resistance of which has to be overcome by all three. Birds and fishes have only one orifice for the three secretions. Only mammals are more highly differentiated. Thus in man the male has two apertures, the female three.

The urinary secretion and the secretion of semen are indeed most closely related to each other. In the male they share a single common outlet, the prolongation of the urethra. Up to this point the embryonic excretory duct of a true embryonic kidney, the Wolffian body, serves as a genital canal. In the same way the female genital canal is strictly speaking only the excretory system of a rudimentary pronephros.

I must at the outset ask the reader's indulgence when discussing the intimate details of any one of the functions, which if we employ the comparative method are highly important on account of their analogy with the other functions, but in themselves are not very savoury . . .

In the end this will be worth while, and if we pursue the comparative method the reader will have an additional gain. It is a touch-stone for selfknowledge. Anyone who is annoyed by these physiological details, need not read any farther; he must realise that he is scientifically not sufficiently emancipated to be able to study such difficult questions successfully. Let him choose something easier.

It was the duty of the author of this work not to withhold anything that could be of service to the reader. He begs that any obscurities or errors may be pointed out to him, so that he may avoid them in future.

At present errors are unavoidable, as this method of treatment of the subject is still in its infancy.

15. The different origin of the three different products of excretion.

Before making in the next three chapters a comparative study of the excretory function in the three different cases, we must state here at once, that although the excretory mechanism is the same, the excreted material is entirely different in the three cases. We shall at the same time inquire in every instance how far we have to do with a glandular secretion, a question which we have already touched upon in chapter 2.

Firstly the intestinal contents. The intestinal contents consist of a mixture of waste products and glandular secretions. The gut contains firstly all gaseous, liquid and solid waste products of the food we have taken in, substances that have not been absorbed, but are simply expelled after passing through the alimentary canal. The lower portion of the intestine moreover contains large quantities of the bacteria which have been of service in the process of digestion. Further the gut contains the whole of the secretory products of all the digestive glands, from the microscopic gastric and intestinal glands to the large glands, such as the liver and pancreas. Next to the food-residue, the products of this glandular secretion are quantitatively very considerable. This is clearly shown by the fact that at birth faeces are passed, although the newly-born child has never yet taken any food, unless perhaps it has swallowed a little of the "waters" (liquor amnii). Finally we find in the gut as well as in the other excretions, numerous dead epithelial cells and much mucus; both derived from all the mucous membranes of the gut and of the gland-ducts.

Owing to the admixture of food-residue, the evacuations of the gut are called excretions instead of secretions. This distinction is however, not as important as appears at first, for if only wholly digestible food-materials are taken in, such as rice, sugar, butter, roast-beef, etc., the food residue almost entirely disappears.

The color is derived from the bile. As soon as the supply of bile is cut off, the faeces become colorless. The odour is that of putrefactive processes, and may therefore be made almost to vanish by the daily consumption of Yoghurt (a bacterial

preparation of milk first introduced from Bulgaria. Transl. note). But the smell of any substances accidentally mixed with the food, such as sulphuretted hydrogen compounds after the ingestion of sulphur or onions, remains unaltered.

The volume of the faeces is more or less proportional to the food residue, but depends even more on the water content, which is sometimes very small, but may at times be excessively great, so that the intestinal contents may become quite liquid*.

Under the influence of some drugs, e. g. Epsom salts, and some diseases, e. g. cholera, the excretion of water by the intestine may considerably exceed that by the kidneys. The excretion of the contents of the bowel is dependent above all on the volume of the contents. Here, as in the other two excretions, the mechanical pressure produced by over-distension stimulates contractions in the muscular walls, at the same time the irritability of the intestine may be either morbidly increased or diminished.

Secondly the urine. The urine is a typical glandular excretion, a waste product of the glandular cells of the kidneys. Since, however, the cells of the kidneys are very well supplied and nourished with blood, the urine also contains the main portion of the liquid waste products of all our tissues and organs in so far as they are introduced into the circulation by means of the lymphatic system**.

These products of metabolism are in the first instance those of the muscular tissues, which perform our mechanical work. It is therefore hardly to be wondered at that the smell of the urine, when no food is taken that might influence it, is rather like bouillon, even if no meat has been eaten***.

The normal color is pale yellow, as the end-product of the

* In taking a medical history it is usually wise to inquire into the consistency rather than the volume, the latter being very often wrongly estimated by the patient, and necessitating a further examination, a task one would rather dispense with for one's own sake as well as the patient's.

** Solid substances are at first not contained in the urine. The gaseous end-products of our metabolism are excreted by the lungs.

*** If for example small traces of oil of turpentine are swallowed or even only inhaled, the urine will assume a pleasant odor of violets. In ancient Rome, the ladies of the demi-monde did this on purpose, and they took a little belladonna, (hence the name) as well, so that the pupils of the eyes should become as large as possible.

coloring material of the blood. In contrast to the two other excretory products, the product of the kidneys is liquid, and yet it is often not quite liquid enough to keep all dissolved substances in solution. If the urine is left to stand in a glass, preferably a conical one, for a few hours, numerous crystals will be seen to form. Sometimes even at body temperature, some of the crystals are undissolved, and so gravel and urinary calculi form*.

The production of urine varies in quantity with the rate of metabolism, and especially with the blood pressure. The blood pressure and the secretion of urine can be artificially increased by all kinds of stimulants, for instance through the consumption of strong irritant drugs like alcohol, hops, cantharides (Spanish fly), oil of turpentine, balsam and many ethereal oils and condiments.

The production of urine is indispensable for the continuation of life, on account of its vital importance in purifying the blood. And when the urine has finally collected in the bladder, it must, sooner or later be discharged either consciously or unconsciously. It is not so much the composition of the urine as its quantity, i. e. the over-distension, which stimulates the muscular wall of the bladder to contract, though the susceptibility of the muscular wall may vary considerably.

Finally we come to the sexual secretion. As the bladder periodically expresses the urine by means of muscular contractions of its walls, so likewise, by energetic contractions of their muscular walls, the seminal vesicles and ducts of the adult discharge periodically a few drops of a mucous liquid

* In birds the proportion of water in the kidney-secretion is extremely low. It is only distinguishable by color from the excreta of the intestine; white urinary crystals and dark colored faeces. Birds never drink more than they can excrete by evaporation; in contrast for instance to rabbits, which never drink at all, but eat leaves containing a great deal of water, so that the amount of urine is astonishing.

Further if the urine is left to stand a cloud of mucus becomes noticeable, derived from the mucous membrane of the urinary tract, and especially of the bladder; and finally on microscopical examination a number of epithelial cells are seen also derived from the excretory canals, but these are exclusively dead and degenerated epithelial cells.

— the semen — a turbid viscous fluid like a thick gruel, which soon becomes more liquid when exposed to the air.

This is neither a solid substance as in the gut, nor a watery solution, like the urine. It has the typical character of an emulsion. Just as milk is an emulsion of microscopic globules of fat swimming in a colorless menstruum and blood an emulsion of microscopic red corpuscles swimming in a colorless menstruum, so the semen is an emulsion of microscopic sperm-cells swimming in a colorless menstruum, mixed with a quantity of mucus derived from the mucous membrane of the seminal vesicles. Besides this mucus the semen contains a few crystals and a number of dead and degenerated epithelial cells derived from the genital canal. The color of the semen is between that of milk and that of water, and the smell is stale and something like decomposing leeks. Further the reaction of the semen is neutral and it is salty like tears or blood-serum.

The innumerable young vigorous new-formed cells derived from the testes form by far the most important part of the semen, though quantitatively only a small percentage of it. Thus it is not so much a case of glandular secretion as of a quite peculiar new-formation, as we have already pointed out in chapter 2. As in the case of the secretion of urine, the energy with which the secretion is ejected does not depend so much on the composition as on the quantity, i. e., the overdistension stimulates the muscles to contract. Here again we have to consider the varying sensitiveness of the organs to irritation, and the degree of irritation to which they are subjected.

Thus there are cases in which the apparently normal secretion contains no sperm cells (azoöpermia)*. This often happens after recovery from gonorrhea, if the two narrow sperm-ducts are completely closed by the contraction of the scar-tissue in the process of healing; also after operative procedures, for instance vasectomy, i. e. the intentional interruption of the continuity of the two sperm-ducts. If this occlusion or interruption of continuity takes place in adult life, when the seminal vesicles are already accustomed to secrete mucus, this secretion

* A symptom that has nothing in common with impotence. One can only speak of impotence when erections are lacking, for instance in paralysis of the external occlusory muscles.

of mucus without admixture of spermcells can go on as before, and indeed with all its normal attendant manifestations of congestion, erection, desire, voluptuous sensation and satisfaction. If however the two testicles have been removed, especially in childhood, then not only will the ejaculate contain no sperm-cells, but the organo-chemical matter mentioned in chapter 4 which gives rise to the normal irritability of the adult nervous system will be absent from the blood-stream. Such an individual is not only definitely impotent but is also defective in other respects.

Unlike the production of urine, the function of semen-production is not in itself an essential condition for the preservation of life. As all of us have lived through childhood without producing semen, so an adult can remain alive with little or no production of semen, especially in advanced years. But when once the seminal vesicles become distended, they will empty themselves as in the case of the bladder, either with or without our conscious consent.

The female genital apparatus is more economical, both as regards the number of cells expelled and the periodicity. At menstruation, generally only a single unfertilized ovum, something like an abortion, is expelled together with a large amount of blood and mucus derived from the excretory tract, and with a number of dead and degenerated epithelial cells. At the beginning and the end of menstruation mucus preponderates, during its middle period, blood. In the seminal secretion of the male pinkish traces of blood may also occasionally be found, but they are of no importance. In the same way, in catarrh of the mucous membranes of the bladder and bowels the mucus may be more or less tinged with blood, especially in infants and young children. It is not improbable that originally in carnivorous animals this greater amount of blood in the female secretion had a certain significance as a sexual lure in the struggle for existence. It also made the sexual act easier at that time when this discharge of blood was still a principal factor at the rutting period.

Apart from this sexual secretion, a small drop of mucus derived from the genital canal may be excreted, by the woman from the mouth of the uterus and by the man from the orifice of the urethra, during sexual excitement; this is of no special

importance as long as the drop is as clear as water. It is often merely an expression of voluptuous feeling. If this drop of mucus in the man or of vaginal discharge in the woman is turbid and milky or purulent, it means in the man certainly gonorrhea in the woman possibly gonorrhea, but in most cases only leucorrhea or "fluor albus", which the French politely call "fleurs blanches" instead of "flueurs blanches".

Such a catarrhal discharge from the female genital tract may be comparatively harmless, containing only putrefactive bacteria, but it may also contain pathogenic germs, even those of a contagious disease, for instance gonorrhea. So it is much easier to make a mistake in the diagnosis of this disease in the female than in the male. The latter notices it early because milky or purulent drops escape from his meatus, (hence the name gonorrhea = flow of semen which was given to it in error). These drops leave starch-like traces on the linen in drying. Violent pain and burning on micturition and on erection induce him to consult a doctor. Actually each day's delay makes this disease of the mucous membrane more difficult and more tedious to cure. For this reason even a very slight infection in which the discharge is at first hardly noticeable, and only turbid, like soapy water, may often give rise to the most unfortunate results. In the woman this disease is as we have said, generally unrecognized in its initial stages, and for this reason it is a prolific source of innumerable genital and abdominal diseases and of sterility.*

While man only gets a urethral discharge by infection with virulent gonococci, woman, probably on account of the width of her genital tract, is much more prone to fluor albus on the slightest provocation, the vulva and vagina being so easily accessible to even the mildest infection. Moreover the possibility is greater because most women and girls omit external and internal cleansing by washing and douching after each menstrual period, so that the resistance of the mucous membrane is soon lowered.

In conclusion if we consider these secretions which were formerly regarded as waste matter, it is not surprising to find

* Luetic (syphilitic) infection on the contrary, often causes a series of miscarriages.

that the microscopic cells, which are by no means waste matter but on the contrary new-formations, have only recently been recognized as important — like pearls in a mass of mud.

It was not till 1677 in the days of the famous microscopist Leuwenhoek that a Dutch student at Leyden, named Lodewyk van Ham discovered the sperm cells, which he called spermatozoa. Swammerdam, who died in 1685 rightly conjectured that contact of an egg-cell with these spermatozoa gave rise to fertilization. The human ovum was not discovered till 1827, by C. E. von Baer, and only in 1850 did du Barry succeed in actually observing the penetration of a rabbit-ovum by a spermcell.

16. Intestinal Excretion.

Some readers may be shocked to find that we mention that function which is so repulsive to us, because it is concerned with the waste matter of the body, in the same breath as the genital function, which is to lead us to the highest idealism. Science however, must not be swayed by sentimental considerations of sympathy and antipathy, which have already led us astray far too long. Those of us who are well brought up are only too prone to make a mystery of the one function because the accompanying sensations are so pleasant and of the other because they are so disagreeable, but this is not right. Science should not make a mystery of anything, on the contrary, it should elucidate everything. Its noblest task is to discover the interconnections between all phenomena.

I consider the intestinal function first, because it offers us the best opportunity for studying the conscious control of our bodily functions. The years in which we had to learn control of our bladder now lie far behind us, but the law of constancy obliges us in advancing years to pay ever more attention to the bowel excretion. Micturition is a trivial matter, especially for the male; it can easily be done anywhere: whereas the activity of the bowel requires far more trouble, self-control, and muscular effort, to produce either a positive or a negative result.

It is more difficult to control this function because in contrast to urination, it is solid matter that has to be excreted; but this difficulty is mitigated to some extent by the fact, that just at the point where the waste matter becomes very much more solid, the calibre of the intestinal canal suddenly widens. Then too, the contents of the intestine are a mixture of solid and gaseous matter. At first it is of a pulpy consistency, mixed with tiny air-bubbles and with saliva. The more solid it becomes in its further progress, due to loss of water, the more gas-bubbles are formed. These help to push it onwards, like the cogs in a cog-wheel.

These gas-bubbles on account of their mobility keep the walls of the gut in labile equilibrium. Finally, resistance is

reduced to a minimum by the mucus which is continually secreted by the whole surface of the mucous membrane.*

It is therefore not surprising that the bowel-excretion does not give rise to the emotional and congestive manifestations which are so typical of the seminal secretion; but intestinal colic may sometimes cause as violent phenomena as those of the sexual secretion, particularly of the female, and even loss of blood.

It is the peculiar construction of the organ that makes intestinal excretion such an important factor in learning self-control. The bladder is a balloon shaped organ which one might perhaps be able to empty without peristalsis, somewhat as a balloon shaped syringe is emptied by a single compression. But the intestinal canal is a tube, several yards long; just as the two seminal vesicles and the two seminal canals are long and narrow. In all these cases the peristalsis of the evacuative movement is unmistakable. It is evidently a continuous wave of contraction such as occurs when a rubber tube is emptied of its contents by being pressed between finger and thumb—which always takes a fairly long time.

At the end of the tube near its external orifice there is almost always an empty space, and here the circular fibres have developed into a real sphincter — the internal membranous occlusory muscle; and whenever the approach of the bowel-contents causes a stimulation at this point, a contraction occurs which brings about complete occlusion. Here as in the case of the other two excretory functions there is an antagonism between the action of the muscle-wall on the one hand and the internal occlusory muscle on the other. Which will gain the upper hand?

These expulsive and occlusory muscles both consist of unstriated (so-called involuntary) muscle-fibres.** Our consciousness is almost powerless in face of this problem. Even the abdominal muscles and the perineal muscular layer (see chapter 8), which both consist of voluntary muscle fibres, cannot

* Or artificially by the daily ingestion of one to three tablespoonfuls of liquid paraffin or white vaseline.

** For the various kinds of muscles see "Muscle" in the appendix at the end of the completed work.

directly interfere, the former because the evacuation of the bowel is a peristaltic movement, the latter because its functions are only secondary, (see page 63).

We are confronted with the question how it can ever be possible to control such a function? To begin with we must make a fundamental change in our conceptions of voluntary and involuntary muscles. This distinction is not absolute, but relative. The greater development of the transversely-striped muscles as compared with the unstriped membranous muscle fibres, is accounted for by the fact that in the embryo the former develop in full activity, as is evidenced by the mother's feeling foetal movements, while the unstriped muscles function very little or not at all during intrauterine life, and are therefore less differentiated from the connective tissue.*

Moreover the unstriped muscles work involuntarily because they lie so deep in the interior of our body, that they are outside the sphere of our consciousness. But even this difference is only relative. All our "voluntary" muscles were in the early stages of extra-uterine life just as helpless and involuntary as our "involuntary" muscles still are. Anybody who has watched little children knows what a lot of effort it costs them to develop all these groups of muscles one at a time into voluntary ones. They learn to do this by experience. At first the various groups of muscles are moved involuntarily as if by accident, and the child observes the sensation of the contraction of the muscles involved as *cause*, and the external phenomena of movement as *effect*, and repeats the same movements in endless variation as a game, till it finally gains voluntary control of the muscle groups concerned. Now that we are grown up we have quite forgotten these exercises and can no longer remember how our hearts beat fast and our heads grew hot from the exertion. What endless trouble it cost us to learn to walk! As grown-ups we can only get a faint idea of it, for instance if we learn to swim or to cycle.

* In confirmation of this we may note the fact that the heart-muscle, which has plenty of work during intra-uterine life, and the muscles of the uterus, which later on have to do such heavy work, have developed into transversely-striated red muscle instead of into unstriped muscle, as one might have expected. However, both these kinds of muscle have remained involuntary because they function outside the sphere of our consciousness.

This training of our skeletal muscles is always only partially successful, and even that only in the case of those muscles which we can observe and which we use frequently. The various groups of muscles in our back for instance almost always remain involuntary, however old we grow. And even with the best training how relative this control is. Artists e. g. famous pianists and violinists, and many skilled craftsmen achieve far more. And if at any time spasmodic contractions occur (see page 66, footnote), the best trained muscles are no longer under our control.

All the involuntary unstriped muscles too, which we have laboriously exercised from birth e. g. those involved in urination, are fairly under the control of our consciousness, though we still notice a certain incompleteness of control; whereas we have studied the control of the skeletal muscles from such an early age and so diligently, that we imagine that they are subject to our "will" and "order" without further consideration of cause and effect.

Yet the whole process follows the same course in both cases, though less smoothly in that of the unstriped muscles on account of their less complete differentiation. We have always begun, consciously or unconsciously, by learning cause and effect, and then later, whenever the same situation recurred, we have applied our experience. Thus we are enabled to make use of this chain of causes and effects in any way we like, by adapting ourselves to it. Here "to rule is to serve", as the greatest rulers of ancient days knew so well.

This is the great lesson of life at which we have all laboured since our birth, and unconsciously even before it. The progress a child makes in this respect is almost incredible, particularly in the first year of life; all the movements of its little hands and feet are at first absolutely aimless but soon have a definite purpose. After endless repetition and estimation of every cause and effect, the child learns at last to control all its movements both as regards time and place, allowing for the law of gravitation and what it has learnt by its sense of touch. Learning control of our transversely striped muscles was, so to speak, our preparatory school; we no longer think of that when we are grown up; but now begins the higher education, which teaches us to become ever more and more conscious

of our involuntary muscles and at last to bring them under conscious control. The reader has already been given the solution of this problem: we need only continue by the same method.

I will use all the details of the exercise of the intestinal functions as an example to demonstrate how we can attain the highest point of mental superiority; for there is no other bodily function which so clearly demonstrates this principle. We shall not grudge the trouble, however small and unimportant many of the details may seem to be. Theoretically it is a question of making the unconscious conscious; practically an involuntary function is elevated into a voluntary one; this is the corner-stone of all self-control and the basis of all higher conduct.

Generally speaking, particularly in the new-born child, and also in states of unconsciousness, reflex peristaltic movements of the intestinal wall occur whenever it is stimulated by distension. As soon as these peristaltic contractions have extended sufficiently far downwards for the occlusory muscles to feel the pressure, the latter contract even more strongly so as to occlude the exit of the bowel completely. This is also reflex action, i. e. movements without the participation of our consciousness.

This antagonism, this battle, may remain undecided for some time — as long as the two opposing forces are evenly balanced. We can interfere voluntarily with this process either by augmenting the pressure by means of the abdominal muscles or by using the perineal muscles to support the internal occlusory muscles. In this way we are able either to maintain or to disturb the balance — whichever we wish. We often do much to bring about the positive result, e. g. we inhibit the contraction of the external occlusory muscles when we pass flatus. In the same way an accoucheur particularly warns a woman in labor not to hold back when the waters break; he does this in the hope that the escaping waters may bring the foetus a good way along the birth canal, and the child may even actually be born. Thus it is possible voluntarily to influence the involuntary muscles.

But most people have no idea of this antagonism, and even we doctors, however well trained in physiology we

may be, do not always remember it, but even without this knowledge we are all sooner or later reminded of this function by feelings of pressure and tension. The mental image of this function occurs to us; by reflex action we gradually and unconsciously adapt our respiration and our musculature — certainly less markedly than if we did it consciously, but nevertheless often not less efficiently. (see chapter 35) *) Unconsciously and for more frequent and lengthy periods, we close the upper openings of our body in order to hold our breath (see chap. 8, page 60), as if we wanted to see if the impulse really existed. Such gentle but oft repeated impulses are often more efficacious in stimulating peristalsis than a single conscious pressure with the abdominal muscles. **) A small gas bubble is easily set in motion, and when the internal balance has once been disturbed, it is not so easily restored.

The proper function is even more effectively elicited if these preliminaries are assisted mentally, for instance if we concentrate on the thought: "I must and will go to the w. c. at once"; even if we are not at the moment thinking about a contraction of the muscles. In this way our will power can work wonders, but only where there already exist a chain of causes and effects — never as "deus ex machina" (without a physiological basis) as was formerly believed. *)

The psychological augmentation of the function can be greatly increased by suggestion, as we shall show in chap. 35. for instance: if we take bread pellets in the belief that they are laxatives, as is told of Maria Theresa. In such a case our psyche is completely engrossed by the expected function. The more free we are at such times from other impressions,

*) It is a fixed law that the mental image of a stimulus can produce the same reflex actions as the stimulus itself, though in a slighter degree.

**) Elsewhere too in cellular life, and especially in the love life (see chapter 25), the summation of mild stimuli is more effective than one single powerful stimulus.

* We can only speak of free will in those cases in which our resolution is determined not by a preponderance of external motives, but by internal motives and inclinations of whose ultimate result we ourselves are previously unaware. The method by which we may control our inclinations in anticipation will be set forth in chapter 34.

the more effective is the stimulus. So in hypnotism all our energies are concentrated on one point.

Inversely the impulse will be diminished or may even disappear*) if we are completely engrossed by other impressions and ideas, for instance when we are enthusiastic or nervous**)

We cannot impress too strongly upon the reader, that this function or indeed any cell function should not be disturbed by undue haste. If an impulse to go to stool occurs and is assisted by our voluntary muscles, if we go to that place where we are accustomed to go every day, preferably at a fixed hour, to ease ourselves in solitude and comfort, — the only place where we are allowed to give a moment's rest to our occlusory muscles; we feel this cool sensation (just as a cold water douche is more efficacious than a lukewarm one); finally the moment comes for increased abdominal pressure; then almost always the miracle happens that our involuntary muscles contract exactly at the moment we desire!

This regularity of time and place works wonders — indeed some people can only perform this function in their own homes. This is the force of habit.

The desire to pass flatus or urine may be the first signal that the internal balance is disturbed. But it is better not to respond to this call too soon, just as in parturition it is of no advantage if the forewaters escape too early.

If we carefully observe the influences that are at work, we can earlier voluntarily stimulate the chain of causes and effects, and direct them into the proper channels. Waking up

* Are there then inhibitory nerves which become active? The idea of specific inhibitory nerves seems to me just as absurd as a layman's belief that there are contracting muscles as well as expanding ones. I believe that every nerve action always more or less inhibits every other simultaneous nerve action because (contrary to what occurs in hypnosis; see chap 35) the energy is divided. Our bodies contain some nerve paths which so often produce an inhibition that one rightly calls them inhibitory nerves; but in the case we are considering these do not come into question.

** In adults every nervous dizziness will increase the action of the expulsive muscles of the bowel; especially if they are already weakened with age. In small children on the contrary it is more often the action of the occlusory muscles (which up to this time have been little used) that is inhibited. This may even have lasting results.

and stretching oneself after a night's rest, getting out of bed, washing and dressing oneself — all these bodily movements with the deeper breathing consequent on them are powerful adjuvants. Even more efficacious still are the more energetic and purposive movements, especially of the abdominal muscles, e. g: abrupt contractions of the diaphragm, powerful massage of the abdominal wall, compression of the abdominal cavity with the bent knees while lying on the back, etc. In this way it is possible to stimulate the involuntary muscles of the bowel to contract with absolute mathematical precision. With practice it is possible, even in difficult cases, to render the involuntary musculature of the bowel obedient to our commands, though this training takes longer than in the case of the voluntary muscles, because of the greater differentiation of the latter.

The more attentively we study the physiological conditions, the more easily we shall succeed in setting the chain of cause and effect in motion, and ensure the desired result. We shall have to consider the choice of foods in connection with this function.*

For this reason some people are very fond of brown bread as a mechanical stimulant to the bowel, others of gingerbread, figs or dates, for this reason, too, many people like vegetables and fresh fruit to ensure a large water and gas content for a longer time during digestion.

I have had hypochondriacal patients whose only interest in life was to choose such foods as would prevent constipation, and even discussed the subject at table; these were poor unfortunates who produced nothing else in the world. But if we want to have complete control we must begin much earlier. Even in choosing an occupation we must see that it is not entirely a sedentary one if we are already inclined to constipation. We must continually remind children not to neglect this function.

* Our food takes about two days to pass through the whole length of the alimentary canal. If we go to stool once a day, say in the morning, the excreta passed will not be the result of the midday meal of yesterday, but that of the day before. Laxatives, and in sensitive persons, all sorts of influences, can expedite the process. Gases act as pioneers and clear the way.

Everybody must recognize the importance of the advice given by the doctor to pregnant women to take suitable exercise, advice which favorably influences the movements of the unborn child.

Much of what has been indicated here is always carried out unconsciously in the absence of knowledge, but to attain complete victory, especially in difficult cases, we must conform as far as possible to the physiological chain of causes and effects.

17. The Urinary Secretion.

As during the development of the foetus (see chapter 3) our two kidneys represent only an improved form of the two embryonic Wolffian bodies, so also both the excretory systems are quite similar, and the mechanism of the urinary and seminal secretions almost identical. I therefore beg the reader to consider this chapter not only as concerning the urinary secretion, but also with respect to the seminal secretion as well; a distinct economy, as otherwise it would have had to be printed and read twice over.

The urine originates in two bean-shaped organs, each having its own excretory duct leading to the bladder. The thin, pale bladder-wall consists of connective tissue traversed by involuntary muscle-fibres of which we have already treated; at the neck of the bladder the same variety of muscle-fibres form the internal occlusory muscle (sphincter). Lower down the large excretory duct pierces the perineal muscle-layer, representing our external voluntary occlusory musculature, which when required lends effective assistance to the operation of the internal sluice system.

The fuller the bladder becomes, the more its wall is reflexly stimulated to peristaltic contractions; and the urine would be expressed a few drops at a time, but this pressure reflexly stimulates the neck of the bladder, and so the outflow is retarded for the time being.

The volume of urine in the bladder continually increases, this causes the bladder-wall to contract more frequently and strongly; but the resistance of the internal occlusory musculature is consequently also continually increased, and finally the external occlusory musculature is stimulated and lends its help also. So there results an ever increasing antagonism between the expulsive efforts of the bladder-wall together with its ureters, which continually contribute more urine, on the one hand, and the internal and external occlusory musculature on the other.

These two opposing forces maintain a balance for some time; but as the bladder continually goes on filling, the

desire to void the urine makes itself more imperiously felt, while the antagonism increases in proportion. The antagonism may ultimately become cramp-like and the whole body suffer in sympathy.

We are all familiar with the distressing spectacle of a child who has not had a timely opportunity to urinate. He becomes more and more uneasy and fidgety, squeezes his legs together, as though that will help his occlusory musculature; he twists and turns in all directions in the effort to relieve his pain and trouble. It is quite impossible for him to fix his interest on anything whatever; the more acute the antagonism grows within him, the more excitable and nervous he becomes; and how congested is his troubled little face! At last all his nerve-centres are overwrought, all the muscle-groups of his body twist in clonic spasms, and so we see the trembling, convulsive picture of a maximal hyper-tension. He bursts into a profuse perspiration* until at last, perhaps quite unexpectedly, often because the occlusory muscles have relaxed their energy for an instant, the expulsory musculature wins the day and the urine flows unhindered. The bladder is relieved; only the child's clothing is wetted.

The effect of these peristaltic muscle contractions, which we call the voiding of urine, may be indicated, like the working of almost all physiological functions, by means of a curve, first ascending, and gradually diminishing after it has reached a maximum. At the end a few drops appear, which have been forced out by the stronger convulsive contractions. Taking into consideration the limited result they produce, it is customary to regard these last spasmodic contractions as unimportant, although they are sometimes felt by us the most; but considered biologically they are the climax of the secretory function, a final gathering together of all our energy, by means of which the bladder ultimately collapses entirely, and the sphincter which had remained open during urination again becomes an

* Perhaps this is an example of a diverted reflex convulsion, which we shall consider fully in chapter 21; especially when we reflect how nearly related the perspiratory and urinary functions are, physiologically considered. Unfortunately no definite solution is thereby obtained in this case, at most a temporary amelioration.

occlusory muscle.* Otherwise this secretion would continue to drip away, as we can readily observe, if we purposely suppress this *finale* for a little while.

Even the external occlusory muscles collaborate very actively in the series of peristaltic movements of the finale. And because these muscles lie exteriorly, their contraction is the only portion of this final energetic wave of peristalsis of which we are conscious. And for this reason it was always thought that after complete emptying of the bladder these last convulsive contractions were concerned only with the evacuation of the urine still remaining in the urethra. The inaccuracy of this notion is however quite obvious, because often far greater quantities of urine are involved than can possibly be contained in the male urethra; and this same finale is observed in the female, whose urethra is so extremely short. And it is easy to convince ourselves by observation of the domestic animals, the cows in the pasture for instance, how extensive the finale can be in the female also.

The true significance of this finale as the climax of the peristaltic-secretory function of the whole excretory apparatus only appears convincing when we study it by the comparative method with the seminal secretion, because here, on account of the small volume of the fluid to be voided, the whole secretory function is only manifested in this finale.

With this normal scheme of the urinary secretion in view we should, however, be far from the truth if we imagined that the sensation of desire to urinate is always proportional to the amount of urine actually in the bladder. In the first place we can voluntarily increase the impulse when we submit the bladder to increased mechanical pressure through contraction of the abdominal musculature. Even a distension of the lower bowel may mechanically increase the pressure on the bladder and cause a precipitate desire to urinate.

Besides which, the irritability of the bladder-wall may be artificially increased by the employment of the substances which we have already mentioned on page 93.

We mentioned them then because they increase the amount

* In the aged this indeed takes some little time. It often happens that a few drops of urine continue to dribble away until the internal occlusory muscle has regained its activity.

of urine, and we refer to them again here, because at the same time they may render the bladder-wall excessively irritable and congested. In serious cases the irritability of the bladder-wall may be greatly increased, if through the ingestion of irritating drugs or through chill or infection, etc., a regular catarrh of the mucous membrane has been set up. In such a case the smallest traces of urine in the bladder may occasion the most powerful and painful contractions of the bladder-wall, as if it were greatly distended. Just as in conjunctivitis, a tear-drop in the eye may be as intensely painful as if grains of sand had blown in.

And if one devotes special attention to the desire to urinate this impulse is felt sooner and more powerfully; for instance when a schoolboy holds up his hand in class to ask permission to leave the room, all the other boys suddenly feel the same desire. The same happens if one accidentally sees someone else urinating, or even suddenly thinks of this function.

In all these cases it is the imagination that acts as an irritant.

If then in practical life we seriously ask ourselves the question: is the impulse that I feel at this moment only the result of an accidental stimulus, or is it really the voice of Nature telling me not to neglect this important function, how can we obtain an answer?

It is not always an easy matter to settle this problem. With a little observation and experience we shall be able in most cases to decide what influences are active in any particular instance. Furthermore there is frequently *a posteriori* a very good criterion already in existence, which may serve as precedent. When a real over-distension takes place, if we do not obey the impulse with physiological regularity, it will burden us increasingly until finally the secretion ceases. If however the stimulus is only accidental, then the impulse may perhaps be momentarily much more powerful and peremptory than usual, but never with this regular periodicity; and if we do not yield to it, then in a short time the impulse decreases, far sooner and more permanently than if we had yielded to it immediately.

We can also formulate the same principle in the positive sense: after a suitable satisfaction we experience an appropriate period of rest; after over-stimulation, if we yield, the

impulse will always disturb us more capriciously and no longer allow us to rest.

With all these causes of artificial over-stimulation, a regular, suitable satisfaction, together with a regular and frugal diet can work wonders. Strength of will, exercise and self-control prepare the way. And the more earnestly we look upon life, the more shall we avoid both dangers: excess and insufficiency. We must control our reflexes, but this control should never be abused, and the function deliberately repressed.

If however one attempts too great a repression of this function, then after a few periods of rest the impulse is felt again still more imperiously until finally a period of morbid exhaustion sets in, and the impulse really considerably diminishes; and one is as pleased with this victory as the peasant, who wanted to cure his horses of the bad habit of eating, was at first with his success. But one should never forget that such attempts to circumvent Nature may lay the foundation of paralytic conditions, and cause much suffering later on.

To suppress the function permanently is impossible. Finally the internal tension must become overpowering, and the occlusory muscles are forced to give way. The product of secretion then flows out, voluntarily or involuntarily, but flow it must. As long as we are able to think for ourselves, we must see to it, that no injury ensues from it, either for ourselves or for others. And for this reason Part III is devoted to the problems of self-control.

18. *The Seminal Secretion.*

Now that we have thoroughly discussed the other two secretory functions, we come to the real object of our study; the seminal secretion, apparently the least important of the three secretory functions which are localised at the lower pole of our body, but really the most important by reason of its ultimate effects and the phenomena which accompany it. But the reader who has had the patience to study the other two secretions, has now gained a correct insight into this function.

If however, a thorough description of the seminal secretion is still required, read the last chapter over again carefully; but read *semen* instead of *urine*, *seminal vesicles* instead of *urinary bladder*, and *seminal ducts* instead of *ureters*. The seminal secretion with all the normal and abnormal influences which act as stimuli, follows the same scheme as the urinary secretion.

Just as in the urinary bladder, the antagonism is only caused by the volume, the distension; it makes no difference whether the semen contains a great number of sperm-cells, or none at all. So we see how erroneous was the old idea that the spermatozoa could excite erection by the liveliness of their own movements. This is so far from being the case, that this independent movement does not occur until they can move in a thin fluid menstruum. The following explanation will make clear why we have two seminal vesicles but only one urinary bladder. In the period of embryonic life when the anterior abdominal wall was still quite open, not only the primordial kidneys, but also their excretory canals were two separate ducts leading to the genital eminence. But later, when the abdominal wall was closed almost to the umbilicus, simultaneously with the formation of the umbilical cord, a single unpaired urinary bladder composed of a single cavity, and consequently a single unpaired urethra, are formed.

Functionally, however, there is no essential difference; as a general rule both the seminal vesicles contract simultaneously* and separately only under the influence of very slight stimuli.

* Although the seminal vesicles lie closely pressed against the bladder, one on either side, the urinary bladder and the seminal vesicles never

Because the semen is ejaculated from *two* seminal vesicles, it may be imagined that it will be ejected with greater ease and force. This however is not the case, as the two excretory ducts of the seminal vesicles, and especially their openings into the urethra, are so extremely fine, because really they are only embryonic excretory canals, that even the most powerful contractions of the seminal vesicles are scarcely able to force the semen into the urethra.

It is very significant that these two apertures should be so extremely small, much smaller than the two seminal ducts. Because the two seminal vesicles are only laterally attached to their ducts it may happen, (in contradistinction to the urinary apparatus, in which both the ureters discharge into the bladder itself), that sperm cells simply *pass by* the seminal vesicle without entering it. In this manner it might only too easily happen that semen would escape with urine unnoticed, without exercising its fertilizing function, as is sometimes the case in serious paralytic conditions (spermatorrhea = seminal emission without erection). But the extreme fineness of the two apertures in itself causes a resistance as elastic as the best occlusory muscle. So the antagonism in connection with the secretion of semen is unmistakable, even for those sperm cells which have not penetrated into the seminal vesicles.

The problem of the ejaculation of the semen is rendered very much more difficult, because on account of the small volume of these organs and their concealed situation, the utility of abdominal compression must be inconsiderable. Instead of this Nature employs a far more efficacious method, so that when finally the antagonism has reached a spasmodic culmina-

function simultaneously, any more than at the upper pole of the body swallowing and breathing take place simultaneously. This last does not happen, because when swallowing food, the epiglottis bends downward and so bridges over the windpipe at the opportune moment. And in the same way each time that the seminal vesicles with their occlusory muscles are stimulated, the erection thus occasioned immediately constricts the urethra to such an extent that the voiding of urine is almost impossible. If that were not so, and if the urine were voided along with the semen, as is the case in serious conditions of impotence, the semen would always be washed away with the urine without being able to cause fertilisation.

ting point, it can accomplish the final evacuation in a surprising manner, which will be fully discussed in chapter 21.

Besides there is another specific difference. The urinary function, like the intestinal function, occasions certain conscious definable sensations of our sensory system; the seminal function only stimulates our vascular system. Although this difference is striking it should not surprise us; not because the seminal apparatus is so small and deeply situated, (the smallest stimuli can frequently occasion the greatest pain), but because this apparatus originated in an embryonic period when there was no question of conscious sensory perception, but in which the blood vessels developed all the more extensively.

We can picture the process as follows: in the period when the embryo still floated in its membranes, all the waste matters of its tissues were got rid of by the primordial kidneys. Then as the two primordial kidneys were overgrown by the neighboring reproductive tumours and the toxic waste matters could no longer be got rid of, a tremendous conflict must have ensued, resulting, as happens so often in inflammatory processes, in a vascular new-formation, — in this case the umbilical cord. Hence this specific metamorphosis from embryo to foetus! Henceforward all toxic waste matters could be got rid of by way of the mother's kidneys* until the child's birth, when its own fully developed kidneys took over this work themselves.

Meanwhile these latter had developed in a foetal period, in which the organs of conscious sensory perception also complete their development. Our seminal apparatus however had developed but little since the beginning of the embryonic period; but in this case congestion is paramount. For this reason erection is such a typical phenomenon of the sexual life.

The periodicity of the secretory manifestations is, as we have already explained in chapter 15, dependent on the volume of the substance to be voided; the greater the volume, the shorter the periods between the excretions.

* This theory is supported by the fact that the morning sickness of the early days of pregnancy is a symptom of anaemia and may be successfully treated as such; while in the latter months of pregnancy uraemic symptoms with eclampsia etc., prevail: for further details see footnote to chapter 32.

In this respect it is worth while comparing once again the seminal secretion of the male and the egg secretion of the female organism. If the quantity to be excreted by the male is small, it is surely reduced to a minimum in woman: only one solitary almost microscopic egg-cell.

In conclusion, as we must go a little more closely into the details of periodicity in both sexes, I will make a few practical remarks on the subject.

The age at which the sexual secretion begins to appear, is termed in both sexes the age of puberty. In girls the first traces of menstruation generally appear at from 13 to 15. in tropical races this happens much earlier, but in Germany and Holland frequently much later, especially in the country. This occurrence is repeated regularly at intervals of from 3 to 5 weeks; in anaemic girls fortunately less frequently and less profusely.

In the youth at from 14 to 16 years of age, the first traces of emissions occur during sleep, and these are repeated once or more each week as long as he remains sexually abstinent, antagonism reaching consciousness by means of erections. As far as no external, more accidental, influences make themselves felt, the erection-curve runs more or less parallel with the emission-curve. As often as the seminal vesicles and canals have emptied themselves, or when this has occurred say twice at a relatively short interval, it may happen that under influence of the recent experience erection will recur with redoubled strength; but if one does not give way to it, there at once sets in for a shorter or longer time, a relatively, if not completely, calm period, until the seminal vessels are gradually once more subjected to high pressure.

It also happens in the males of the lower animals that when copulation and masturbation are impossible the seminal fluid is finally spontaneously ejected, especially during unsuccessful attempts at mating.

It is still less commonly known that it may happen exceptionally in the female organism that the typical feeling of sexual satisfaction, with its congestive pulsations, is very distinctly experienced, either during sleep or in a half-dreaming state at night; in the daytime this only occurs as the result of a powerful extra-genital stimulus; e. g. a very passionate kiss.

There is absolutely no cause to worry about our nocturnal emissions, as long as they only happen in sleep, even if they are accompanied by vivid dreams. At most, if they occur too frequently, they leave a psychic depression as a symptom of fatigue. For the sexual function occasions in both sexes a deep agitation of the nervous system, which may be manifested in the most varied ways, particularly in the psychic sphere.

Woman arrives at the end of her functionally active sexual life at about 50 years of age, after the secretion has gradually become less frequent and profuse. Amongst tropical races, where puberty commences earlier, old age also sets in earlier. This time of life is known as the climacterium. We should not be surprised that in the female, although youthful and active in other respects, this function ceases at an early age, if we consider how difficult is for the egg to force its way through the ovarian tissue (see page 25), and how this difficulty must increase with advancing years, as the ovarian tissue loses its elasticity and becomes harder and firmer. But for copulation the *climacterium* (or change of life) is no hindrance; on the contrary it removes all danger of pregnancy. It is only with very advanced old age that the possibility of copulation is lessened and finally excluded, because the mucous folds become too stiff, and vulva and vagina appear to be too constricted.

In man however, even when he is old, the sperm cells which are constantly forming afresh can be so easily excreted, that this secretion only becomes gradually limited with most advanced age, and no limit can be assigned. But what otherwise would be the most effectual stimulus to erection will then be found useless. At any rate sooner or later relative impotence may set in through diminished power of response to stimuli.

When a married person has regularly practised sexual intercourse, and this is suddenly interrupted by the death, illness or absence of the partner and not resumed, there often elapses a considerable interval before nocturnal emissions reappear; a striking proof of how powerful the impulse must have been before the spontaneous emission occurred.

If one is troubled with too frequent nocturnal emissions, e. g. if they occur every night, he should consult a physician

who can no doubt prescribe hygienic measures without resorting to drugs. Emissions only seriously threaten the health if they occur in the daytime: and it is worse, if they occur, as for instance in advanced age, without erection, just as the urine may drip away through paralysis of the occlusory muscle (sphincter).

19. *Impure?*

The monthly sexual secretion of woman has been rather euphemistically called her monthly purification, because in former times it was thought that her blood would be thereby freed from impurities; just as during the puerperium it is termed a purification when the entire open uterine surface cleanses itself. We might with just as much reason call nocturnal emissions a purification, because substances are then excreted which should actually be got rid of. But we are so little accustomed to thinking physiologically, that we take more notice of the external soiling than the internal cleansing.

This soiling occurs so much more easily in young men because there is no wearing of a diaper to help as with girls. This symptom is manifested in the young man quite unexpectedly and at irregular intervals, and any unaccustomed clothing of the parts which could be employed, would only aggravate matters through friction and excite the production of secretion.

I now come to a rather painful question, and I should not have touched on it at all if I had not been so frequently consulted about it in my practice.

Young fellows tell each other that seminal emissions are very harmful; they even think that it is a proof that prostitution is indispensable for them, for a man does not want to "wet the bed" like a baby. This idea scarcely ever fails to convince our young men; yet it is quite erroneous, if only we have the courage to look the facts in the face.

An involuntary escape of urine or faeces is a fearful thing, because the bed or clothing are spoilt at once, though these excreta disturb no one when laid in the proper place. With the seminal secretion however, the reverse is the case. Here normal sexual intercourse can have the most far-reaching and often terrible results; while the involuntary secretion of these few drops causes far less disturbance than, for instance, when through energetic muscular exercise all our sweat and sebaceous glands start secreting at once. And for this reason we are often obliged to change our linen, and to wash the whole of the body thoroughly, including its lower part. In winter if it

is too cold to do this in the bedroom, we should at least rub the entire surface of the skin with a rough towel on rising. If we are also in the habit of going early each morning to stool, we can satisfy all hygienic requirements with a single wash-down. If necessary, we can then change all our clothes, or change day-shirt and night-shirt regularly every night and morning, which is a good habit from childhood and occasions no special expense.

Where is now your necessity for prostitution? Go and preach that to your young companions who perhaps admire your worldly wisdom, take them to a house of ill-fame and in one night ruin their health and their youth and perhaps all their lives . . . but don't prate any more to me about hygiene and cleanliness!

The worthy author of "The Elements of Social Science" goes one step farther. He expresses the opinion that not only are nocturnal emissions injurious, but that they are related to spermatorrhea, which we have already referred to as a symptom of paralysis; whereas in reality nocturnal emissions, which occur with erection during sleep, furnish the best proof of manly vigor, whereby in time of need Nature comes to our assistance with sweet dreams. It is not at all a morbid manifestation, but a natural safety-valve which allows these organs to remain quiescent for long periods without affecting the function, until the happy time when the desired suitable life-partner may be found.

It is idiotic to make such a fuss about this trifling uncleanliness. If we are so particular, we must admit that Nature is never clean, for all living cells contain fluid albumen. If in the spring-time for instance we peel a little twig, the inner bark is quite wet. Everything that we call life makes us unclean. For life is really the absorption of clean elements and the expulsion of unclean ones. *Life* and *cleanliness* are material opposites; we cannot eat out of clean dishes.

Especially in the sexual province exaggerated desire for cleanliness may awaken the worst suspicions. Woe to the maiden whose linen is found spotless when it should be soiled! And to the young man too, who thereby reveals that he has gone astray.

Here the same principle applies, that obtains for every surgeon and every workman, — it is not becoming dirty that is blameworthy, but remaining dirty. Hygiene does not demand of us that we should remain clean, but that we should continually renew our cleanliness. And cleanliness is a virtue because it must be renewed every day. Our whole life is a fight against dirt, a struggle for life.

In times when man had not become so dualistic, this was better understood than at present, and people were often cleaner than we are, in the disposal of the faeces for instance. Only thus is it comprehensible how among savage races the crudest surgical operations, some of which we hardly dare attempt with all the refinement of our modern science, succeed splendidly. This is because they run fewer risks with *bacillus coli* and similar germs (see page 81).

The Pharisees and Sadducees as priests quite rightly busied themselves with such questions of hygiene as the early diagnosis of leprosy, for which they prescribed isolation, and if they drank wine they were careful to strain out any stray fly, as it was their rule not to touch any dead body; and finally an ascetic sect called the Essenes distinguished themselves by carrying a small spade attached to the girdle of their white robes, for the purpose of burying their own faeces, — that was an illustration of the principle of asepsis. Then Christianity came and demanded the “inner purity of the soul”; its adherents unfortunately fell into the other extreme, and sought only our spiritual cleansing from original sin, leaving a lack that was not filled until the coming of modern hygiene.

Through an erroneous idea of what cleanliness really is, much harm has been done, especially in the sexual sphere. Reproaches have been hurled a hundred times against young men for such harmless soiling of linen, and they have thus been driven to self-abuse and concealment of the result. But it is only now that we realize how far we have wandered from Nature.

Mothers have had more tact in these matters. If their daughters have been a little alarmed by the first spot of menstrual blood, they have comforted and consoled them, glad that they had now arrived at womanhood. The first seminal stain should also be welcomed as a sign that the youth is now adult. It

is the pollen of the flower that unfolds full of hope. He should then be comforted by the thought, as we said in chapter 2, that the sexual life is not only a secretory function, but a creative new-formation, which should be honored and not dragged in the mire, and that some day it should bring him the joy of founding a healthy and happy family. Each renewed emission will then serve to remind him of this lofty ideal.

How many men there are whose lives are darkened by despair, and who might have been happily rescued if their mothers had spoken thus with them at first.

20. Congestive Action and Psychic Influences.

Erection is the most prominent manifestation of the sexual life, but it can only occur, if firstly a certain degree of congestion, and secondly a certain degree of irritability of the central nervous system is present, two preliminary conditions which mutually support each other very effectively.

What causes the congestion? In order to answer this question we need only refer once more to our parallel between the urinary and seminal secretions.

We have not forgotten the case of the child with such a strong desire to make water (page 108), who was denied the opportunity; here we see so plainly the secretory antagonism with all its accompanying symptoms, so congestive and then so spasmodic!

I beg the reader carefully to recall this familiar picture of childish suffering; it is a picture of suffering mankind, wrestling with its bodily needs. Especially is it a picture of sexual suffering with its congestive excitement; and I can only imagine one other picture that can equal it: that is the ecstasy of voluptuousness, when at last the natural desire can be gratified*

If we can appreciate this picture, we immediately have the answer to the question how it is possible for such an apparently insignificant function as the voiding of semen to excite so much congestion. As we have seen in the last chapter but one, the embryonic origin gives the predisposition; but sometimes the resistance occasions such marked congestion as to prevent ejaculation. For unfortunately the secretion of semen is a function which always meets with strong resistance. Remember that this thick, viscous mucous emulsion must be forced through two capillary tubes in order to reach the urethra. What resistance! Is it then surprising that all the symptoms of congestion which appear only exceptionally in

* As a contrast to these two pictures of youth, let us think of the senile symptoms occurring in advanced age, when, as a consequence of paralysis of the antagonistic resistance, semen escapes unnoticed and unrestrained. Here voluptuous sensations are out of the question.

the secretion of urine, should regularly accompany the secretion of semen? Such colossal resistance which can never once be abated! So in this case the impulse must be increased to its extreme limits before so great a resistance can be overcome. The seminal secretion dominates the entire circulation of our blood; it makes us blush only to think of it.

And furthermore a man ought to think himself lucky to get off with a simple congestion; it is much worse for women, for in their sexual life they suffer from repeated haemorrhages, first in the tissues of the ovary, then in menstruation, and then a great deal at child-birth.

Every child who has an excessive desire to urinate shows the congestion principally in his face, an accompanying symptom of the cerebral congestion caused by the psychic strain on the will; for a congestion always occurs locally where an organ is strained to the extreme.

With the seminal secretion is essentially the powerful local resistance that calls forth local congestion, through which, as we explained on page 67, a maximum erection occurs, as soon as the external occlusory muscles are drawn into the antagonism by sympathy.

In some exceptional cases an erection occurs when urine is voided. I remember the case of an infant only a couple of months old, that is, too young for any psychic influence or training to be concerned. His parents paid great attention to hygienic questions and had kept him always scrupulously clean and not too tightly clothed. "I always know" said his mother, "when he wants to urinate". "How can you know that?" I asked. "I can see it," was the answer, "when his little member swells. Then I hold him over the chamber till he passes urine." So in the case of this inexperienced little boy, the normal muscular antagonism that accompanies a desire to urinate is sufficient to act as a local stimulus and occasion an erection, although only a childish one.

So we see that erection, viewed theoretically, is not by any means confined to the sexual life. As we have already shown in chapter 10, it is ultimately a function of the external occlusory musculature, as soon as this is sympathetically affected by the antagonism of one of the three excretory systems. Every adult man knows how strong an erection

may be produced in the course of the night by an overcharged intestine or bladder; and how frequently, when waking in the morning, erection, perhaps accompanied by erotic dreams, is a warning to empty the bladder. In advanced years a man is often proud of his virile powers, and they suddenly disappear just as he wants to utilise them. And then the attempt to approach the object of his desire banishes for an instant the impulse to urinate, and the whole illusion disappears. This mockery, and, when it happens frequently, this misery, might be spared, if one properly understood the facts of the case.

And erections in childhood show us more unmistakably than anything else that erections may occur without any pressure of semen. At this age there is no pressure of semen at all. That at this age it is only a childish erection, depends not only on absence of any distension of the seminal vesicles, but also on the fact that the spongy connective tissue is not yet very rigid, and that the appropriate organo-chemical substances have not yet increased the irritability of the nervous system. But still it is an erection.

Both stimuli often act together: the urinary and seminal pressures. That this never leads to an unwelcome mixing of both secretions, depends on the fact that in man each of these two functions precludes the other (see page 113). This is not so in woman. I remember one case of a grown up young girl of good family who was rather stupid. She was always trying to escape from her parents' home to have intercourse with young fellows. This led her also to masturbate and wet the bed. In youths the contrary is often observed, they cease wetting the bed on reaching the age of puberty.

An erection is more rarely produced by intestinal antagonism; but I have seen such cases produced by sudden expulsion of intestinal gases.

But in the first bloom of life the sexual impulse is so overpowering, that we really get the impression that erection is exclusively a sexual function. In this period of our lives it is really the sexual impulse that acts as the causal factor in the vast majority of cases. This should not surprise us. Ultimately it seems to depend on the lumen of the excretory canal, whether or no the antagonism shall assume the spasmodic character which is essential for the production of erec-

tion. The frequency of erection is in inverse proportion to the lumen of the excretory canal. So all the above-cited experiences bear witness, and we are now able to see why in this respect the pressure of the semen has the lion's share, if not the monopoly.

From this principle it will also be evident why the erective function must occupy so much more modest a place in the female. The female genital canal is typically characterised not by narrowing, but by widening. The female urethra is also less complicated and wider than in man. Only the intestinal canal is of the same diameter in both sexes.

So far we have only dealt with the increase in the force of the blood stream, as it is occasioned by the muscular antagonism. So as to avoid as far as possible complicating the question, I have not yet touched on the active role played by the central nervous system, a role which is so important not only in the spiritual side of love, but also in the more material mechanism of erection. For the production of an erection, a strongly reacting central nervous system is required to serve as the connecting-link of the reflex.

The principle is sufficiently familiar. When, prompted by a stimulating sensation, our muscles begin to move, this takes place with the rapidity of lightning, yet the process is not at all simple. In most cases in order to produce this action the message must go a long way round, just as when we send a telegram; first to the central office, and then on to the destination. In this way a sensation is transmitted over the sensory nerves to the central nervous system, (brain or spinal cord) and thence back to the group of muscles involved, which then contract.

In and for itself alone this digression would have no significance, but on this complicated circuit not only can a stimulus influence many side-lines and become combined with other mental pictures, but it may also, no matter how weak it was at first, be immensely strengthened. For all nerve cells, like all the other cells, have the power of storing up energy. In mechanical work as a rule the newly formed energy is instantly used up, because an immediate result is demanded. But cell-life never acts in such haste. Here, by the

absorption of nutriment, energy is slowly but unceasingly stored up. So too in the cells of the central nervous system, as soon as the cells are set in action, e. g. when a group of muscles is to be brought into reflex action, either when a group of skeletal muscles must carry out bodily movements, or smooth muscles must move the intestines, or the blood pressure must be regulated by increased heart action or arterial contraction.

So to a great degree it depends upon the normal sensibility and on the reserve of energy in our central nervous system, how rapidly, correctly, and powerfully we are accustomed to react to all influences, and how smoothly all our functions can be performed.

It is also an indispensable condition for the production of a powerful erection that our central nervous system should possess great sensibility and a store of energy.

As has been abundantly proved by Steinach's experiments (see chapter 4), it is the organo-chemical substances secreted by our testes or ovaries which produce this increased sensibility at puberty. If however, through advancing years, this sensibility is greatly reduced and the seminal tension not so imperious, it is then almost entirely during sleep (see chapters 35 and 36) that the mental energies may be concentrated without disturbing influences, and that an erection may occur. In this connection we understand still better why in the bloom of our sexual life, it is precisely in our sleep that we are overtaken by emissions, and why it is in the intoxication of love that sexual passion can rise to such heights.

Owing to the changeable character of our central nervous system it often happens that the most trifling causes may lead to the most powerful excitement, and also the most trivial stimulus cause the strongest erection. Now we may better understand why our whole nervous system and especially all our sexual impulses are continually so capricious, so changeable and so uncertain.

And now it will be clear to us, how on this complicated circuit all kinds of side influences can affect us, either accelerating or inhibiting, especially the psychic influences to which we have already referred, when we stated that the special alarm-signal, the erection, which should theoretically only be the result of

an over-filled reservoir, may be aroused at other times by other stimuli, such as a mental image.

It is still more important that the nerve-paths that we have described, represent a link between the spiritual and the material life, by means of which the most beautiful interchanges can take place. One thing in the sexual province is most surprising, and that is that while the congestive stimulus at the lower pole of the body awakens the soul, through the spiritual sphere this passion may be turned into love.

The higher the stage at which we stand in the history of the evolution of the species, the more complicated these nerve paths become; and so we have ultimately arrived at the point where we feel spiritual love to be something far more precious than its physical basis.

Because our brain possesses such a number of complicated nerve-paths, the mental energy can if necessary be diverted into quite other channels, particularly into paths which calm and soothe the sexual excitement. Every stimulus in other sections of the brain, or in other portions of the body, and every congestion in other brain centres or other parts of the body is capable of exerting a restraining influence on our sexual impulse. This constitutes one of the most important factors in self-control.

21. *The Erection and the Climax.*

So far we have studied the causes of erection, and how it is called forth through muscular antagonism, congestion and nervous impulses; we shall now enquire further into the significance of this phenomenon.

An erection occurring during defecation is of no consequence, when urinating it may be injurious; for it has not developed any further in connection with these two functions. It has developed into the curious and striking complication with which we are all acquainted, only in connection with the seminal secretion.

It is a game of ebb and flow in our circulation which of itself fills us with pleasure and delight. But erection is of quite special significance for the seminal secretion: it shows us in the simplest possible manner how we can be freed from the tension of the secretion; it spurs us distinctly on to massage, and thereby arouses in this organ, which has hitherto experienced only a desire to urinate, an entirely new impulse.

I speak of this by analogy with other swellings. The tension and redness of inflammation, the pain and tension of a bruise, the pimple and itching produced by an insect sting, are all related cases, in which tension and swelling almost invariably drive us to massage.

Now we begin to perceive how it is possible that the sexual stimulus can be so raised to the climax of passion and delight, and is far more impulsive than any of our other bodily needs. The more we yield to these acute massage-motives, the more passionate their character is seen to be. If we just think of a tiny swelling caused by an insect sting, when we start to rub it the irritation becomes more and more intense, until we have scratched it open and fluid exudes. So also the seminal pressure, with its accompanying resistance, its congestive erection and massage-motives, excites our circulation and respiration and our whole being far more intensely than any other cause.

We are especially excited by the convulsive movements we have already referred to (page 67) and it is these convulsions which fill us with pleasure; for each one brings us a step

nearer the climax, or tends to do so. They give us some idea how supremely happy the final convulsion will make us in the act of copulation if we can only reach this point.

If however, one fine day, tired of struggling, we want to permit the secretory catastrophe, simply because we wish to give up further resistance, we shall soon see that it is not so simple a matter as it was with urination.

Whenever we are troubled with a desire to urinate, it is quite sufficient for us to withdraw the resistance of the occlusory muscles to occasion an immediate flow of urine. Besides which we can increase the strength of the stream or moderate it, as we wish.

Now try just for once to evacuate the seminal vesicles voluntarily. These organs are much too small for that, and lie too deep; and besides, the resistance is much too great, even when they are overdistended. Even if prizes were to be won by it, the man is not yet born who could evacuate his semen to order, no matter how much strength he may exert in the attempt. The first condition necessary for the evacuation is erection; but in order finally to expel the semen, the erection alone does not suffice; even the convulsive movements to which we have referred cannot alone effect this.

Because during adult life seminal secretion and erection are always coincident, it has always been teleologically understood that erection facilitates ejection. But such is not the case! Quite the contrary. The erection even increases resistance, because as a true function of the external occlusory muscles, the calibre of the urethra can only be diminished by the congestive swelling thus produced. Just try for once to pass urine during a strong erection!

Now we come to a fatal incongruency. The more the erection drives us to massage, the worse the state of things becomes, for all massage and especially the massage of coition, increases the erection and thus carries the resistance to its culminating point. Only the magic wand of Nature is needed to give relief when the acme of despair has been reached. Well, Nature accomplishes this miracle.

In our central nervous system a stimulus generally follows reflexly over an old and much-used path. If a speck of dust

flies in my eye I close my eyelids; if I feel that I am falling, I stretch out my arms; if a portion of my skin is irritated by local cold, my superficial capillaries contract at this point. These are all common reflexes, so as to prevent further specks of dust from being blown into the eye; to prevent us from falling further or catching further cold. Thus the stimulus always follows the path which long experience has proved useful.

Although all the nerve cells in the central nervous system are abundantly inter-connected by very finely branched processes, so that all paths are open for all sensations, yet the regularity in following certain paths is so great that there are certain groups of nerve-cells which perform a certain function with such regularity, that we term such a cell-group the *centre* of this function. So for instance in the brain and the *medulla oblongata* we possess centres for respiration and vomiting; in the spinal cord, that is to say in its sacral and lumbar regions, an erection-centre, an ejaculation-centre, a defecation-centre and a micturition-centre, etc.

Sometimes however, the normal path will be abandoned in the most curious manner, when the stimulus takes quite another path from the accustomed one. This is termed a *diverted reflex*. This is the more liable to occur the more excessive is the stimulus, and it can therefore scarcely be restrained within the ordinary limits, especially when it is convulsive, i. e. uncontrollable. Then only too easily will it follow other paths than usual, and preferably such paths as have already served once, or perhaps several times.

For instance, a person who has once suffered from *migraine*, that is one-sided spasms of the vessels of the brain, will later on perceive these same contractions of the vessels, not only when he catches cold again on the same side of the face, but to his great astonishment also when any other part of the body is attacked by cold. I myself have suffered from migraine on several occasions when my arms have been too long exposed to the cold; the contractions of the vessels of my arms were transmitted to the cerebral-vessels; if then through the pain I vomited for an instant, everything was all right again*.

* This vomiting I first had when quite a little boy, as I was rolling a big snow-ball with bare arms, and had a thick fur-cap on my head. A correct insight into these diverted reflexes makes much clear for us

And who is there who does not remember the hearty laughter at some children's party, where one of the children, who had laughed too much, at last broke out into a violent fit of spasmodic weeping? Or who cannot remember a poor baby with whooping cough, who had a fit of choking and was in the greatest distress until all at once it vomited, and so its little life was saved!

A similar thing happens at the climax of the procreative act. The erection which has spasmodically increased, suddenly becomes an excretory function, because the spasm of the excessive erection* driven to its extreme point by the movements of coitus is diverted to the ejaculation-centre situated a little higher in the spinal cord. Then the resistance of the external occlusory muscles is immediately relieved as well as the intensity of the erection, while the strength of emission is doubled. With a few convulsive movements all is over.

This commotion is so sudden and powerful that one really feels the relief and pleasure as if it came from the spinal cord itself.

There is a striking contrast with the excretion of urine. Not only have we no difficulty in making water, but as a matter of fact we can only hold it back with difficulty if we compress our occlusory muscles with all our might; this only succeeds for a time until ultimately the pressure becomes too great for us, and we relax. However it is not in our power to press out the few drops of thick semen. Here it is only the diverted reflex that can save us.

It is especially during our sleep, when resistance is absent, that the whole thing can happen so gently that we scarcely dream of it and do not wake at all. In rare and exceptional cases, e. g. if it takes too long to satisfy the wife, in the act of coitus, on account of semi-anaesthesia and total exhaustion of resistance, it can happen so automatically that we scarcely notice it. Normally, however, it is typical that the more erection is reflexly increased through lively movements in coitus, the

doctors which would otherwise not be clear at all, especially in the sphere of spasmodic contractions of the vessels and muscles, which otherwise one would perhaps accept as being voluntary or simulated symptoms of hysteria and neurasthenia.

* i. e. spasm of the external occlusory muscles.

nearer one comes to the moment when the excitement, increased to the point of madness, becomes an excretory function.

Then there is no more delay, no gradual diminution of resistance, no curve of fatigue which heralds defeat, but just as in the above mentioned instances of diverted reflexes we have this sudden paradox: the greater the spasmodic resistance, the stronger is the sudden ejaculation. Then the semen will be thrown as high up the vagina as possible. Similarly in the wife the analogous erection of the clitoris and mutual massage movements have caused meanwhile the most voluptuous sensations, the same catastrophe happens in her case. The erection was needed to successfully call forth this manifestation. Although, or perhaps because, it betokens an increased resistance, it possesses such great value for this catastrophic secretory function. The more tightly Cupid's bow is drawn, the more deeply the arrow sinks into the heart.

22. *The Secretory Function in woman.*

It is far more distinctly recognizable in woman than in man, that the reproductive cells originate from a tumour, in this case the ovary. Here there is no such system of excretory ducts as in a glandular function. Only after the egg-cell has reached the neighboring excretory system of the rudimentary pro-nephros do the same purely secretory processes take place as in man.

While in man the first escape of sperm-cells from the cell aggregation does not produce the least sensation or excitement, and sexual excitement is only felt after the seminal canals and vesicles have been subjected to considerable pressure; in the female organism on the contrary, a deep-seated stimulus must be produced, though perhaps an unconscious one, every time an egg-cell forces its way out of the ovarian tissue, like a tiny abscess (see page 22). This occasions discomfort and spasmodic pains, which are simply attributed to the troubles of menstruation. Furthermore in the two egg-ducts and the uterine cavity the same secretory character as in man finds its expression, because the ovum mixes with the mucus, and later with mucus and blood from the genital passages. The uterine wall is far more muscular than the walls of the seminal vesicles; and on this account the monthly expulsion of the sexual discharge, composed of this mixture, may occasion the most severe spasmodic contractions.

It therefore results that in woman, no less than in man, the entire genital sphere works in a state of labile equilibrium, with muscular contractions and congestions; an ebb and flow manifested in man on a considerable scale by erections, but in woman on a smaller scale by the less striking erection of her clitoris. It is however a moot question in which of the two sexes the influences and stimuli are the more powerful and intimate! The females of the lower animals give expression to these acute sensations of tension and pain by their peculiar cries; the cow for instance by a loud cry indistinguishable from her lowing when she wants to be milked.

But it is coitus which in woman, as in man, causes the deepest and most agreeable emotions. In both sexes this occurrence forms not only the climax of erection, but also the climax of the secretory function.

In extensive falling of the womb (*prolapsus uteri*) in which the mouth of the womb becomes visible, it has actually been observed under the influence of artificially induced sexual excitement, that a drop of mucus (see page 95) is first pressed out of this organ and then on cessation of the uterine contractions is aspirated again inwards. We thus see that at the critical moment a violent contraction of the uterus takes place, analogous to that of the seminal vesicles in the male.

This outward and inward movement of the drop of mucus, although certainly very efficacious in facilitating conception, is however not absolutely indispensable; for the sperm cells are active enough to find their way up alone, even if they have only been deposited at the entrance to the vagina. It is not infrequent that a young girl is rendered pregnant, although she was not at all aware of having experienced proper coitus.*

And still more convincing are the cases, not at all infrequent, in which a woman finds herself pregnant although penetration into the vagina was quite impossible, either on account of the narrowness of the vagina or for some other reason.

In this connection it is most important to enquire whether in normal coitus the amount of fluid secreted by the female canal at the orgasm is not much greater than one would be inclined to think from the above-mentioned experiment Re-

* This condemns the so-called Spanish method as unreliable, a mode of copulating which is often used in Spain with the object of avoiding pregnancy, and officially tolerated by the Catholic church, because according to Aristotle the "*virtus attractiva*" of the womb is sufficiently powerful to lead to conception if the semen is deposited anywhere in the vagina. (Sanchez: "*De sacramento matrimonii*".) This mode of copulating consists of the following: just before the ejaculation the partners change their positions, so that instead of the woman's legs being spread apart, she holds them close together, and the man's are outside hers. Now if the woman squeezes her thighs close together it is impossible for the man to penetrate far inside.

ports of trials made with "Karezza"*, in which a much longer time of enjoyment is allowed the female partner, seem to me to bear this out.

In any case the sperm cells generally find a sufficiency of moisture within the walls of the vagina after sexual intercourse to enable them to swarm up, attracted also by the favourable thermic and chemotactic conditions. So it is easy to understand why the chances of impregnation are greatest when both partners experience the orgasm at the same moment.

And then if fertilization really takes place it becomes apparent how much secretion the uterus may contain, — far more than the seminal vesicles. Some nine months later, through over-distension, the muscular wall of this container is stimulated to contractions compared with which all the secretory activities of the male are but child's play.

The question, "to what extent in the sexual life of woman can the orgasm appear as abruptly as in man?" is, with many married couples, an extremely delicate one. We men always seem to think that there can be only *one* right mode of intercourse that gives satisfaction, and that is the method we are in the habit of practising personally. We then expect the impossible from our wives; yet the excretory canal of the pro-nephros is quite different from that of the primordial kidney.

In the female organism the clitoris too has only a limited power of erection, consequently the orgasm never takes on the impetuous and violent character that it does with us men. And there is another difference too. Internally, instead of two tiny seminal vesicles, the woman possesses a large muscular organ of thick red muscle, the *uterus*. So it is not surprising that it takes much longer for her to reach the

* *Karezza*, also called *Zugessant's discovery*, is a mode of copulation in which both partners lie so still in mental ecstasy, that there is no ejaculation at all; so that they can have intercourse in this way as often and as long as they like. Those who have practised it describe it as a continuous revelling in voluptuous sensation, just as in their courting days, though at that time they had never been able to have enough of it. But this practice is scarcely reliable enough to be classed as a preventive method; only the man can, when ultimately his feelings overpower him, use the so-called French method, and withdraw before it is too late; or he may, as a guarantee against surprise, wear a sheath.

climax; but when once she reaches the congestive condition, and the nervous centre which actuates her uterine contractions is set in motion, her excitement will not be so easily calmed as that of man, who sinks immediately after he has reached the climax into a sort of impotence.

I am fully aware that there are certain women who reach their culminating point just as abruptly as men, and this may be accompanied by an internal sensation of pulsation; but in the majority of women the curve of voluptuous sensation follows another and more symmetrical course. If we make a graph of both curves we shall find that man's rises sharply to fall again, like the outline of the steeple of a church, while that of woman is a long and gradual curve like the indented roof of a cathedral, with wavy lines due to peristalsis. I therefore think it much better to give two different names to these manifestations in the two sexes, and to speak of the man's *culminating point* and the woman's *sexual ecstasy*.

A very profound difference in the sexes is here concerned, and in the ultimate consequences of the act of the coitus the essential differences may well be observed: as soon as the rapidly accomplished act is completed, the man is finished and is not personally concerned any further; but the woman now begins to feel first the anxiety of uncertainty, and later a world of maternal solicitude and devotion.

It is highly interesting to note in this connection that, as ethnography teaches us, in every case where there is a question of functional power, woman shows more staying capacity, while man is capable of a greater momentary effort. In the scheme of reproduction the sexual division of labour goes back to the hermaphroditic period; it is indeed the oldest division of labour in the world, and analogously in the history of man, the first economic division of labour was made when the man went hunting or fighting, while the woman stayed at home to keep things in order. So from the earliest times our sexual organisation has been the ruling factor in every detail of our lives. Indeed even before birth we see a picture of the sexual life in miniature, how manfully the sperm-cell marches forward, while the egg-cell stays quietly at home.

23. *The Purpose of the Sexual Life.*

The adaptation of the whole mechanism of erection is so excellent, that we should now like to say a little about it from a theoretical standpoint.

In the period of enlightenment which followed on the theological middle ages, people turned their attention once more to the study of nature, and they were especially delighted with the adaptation of various phenomena. But to the leaders of this movement, such as Bernardin de St. Pierre and Süssmilch it was soon apparent that this method places us at the mercy of a boundless imagination. DARWIN was the first to formulate a new principle — that adaptation ensured the survival of the fittest. But even this does not by any means remove the danger of subjectivity.

Meanwhile in the field of mechanics and physics another method has been shown by experience to be most successful, namely the investigation of the chain of causality. But at first it was not possible for them to apply this method to living Nature with its endless complications, because they sought adaptation in everything. It was only later that men began to investigate free from prejudice, and to recognize imperfections in Nature itself. So we no longer regard adaptation as an invariable thing, but only secondary and auxiliary, because as a working hypothesis it can often point out the way by which we can trace the causal connection.

Yet, whether we speak of adaptation or non-adaptation, we must never forget that these are only phrases — and so must only be taken as relative.

Although not introduced pedantically every time, this prudent mental reservation must always be thought of when in this work I speak of adaptation or non-adaptation, phrases which would otherwise be rash and presumptuous. It is not possible for us men to regard all things in their mutual relationships, because in Nature two sorts of phenomena occur, which are diametrically opposed to each other — construction and destruction, progression and retrogression, which however, are interdependent.

that is really a figure of speech, as though we were speaking of human actions consequent on human considerations; and it would seem as though we had dared theologically to take the stand that we had some insight into the purposes which have ruled in creation since the beginning of all things. But in the study of Nature it is not permissible to speak literally of Nature's purpose. In Nature we can only recognize cause and effect, or more correctly speaking really only a constant occurrence of phenomena side by side and one after the other, from which we may guess with more or less success, the probabilities of the future series of events.

Only in our brain as the highest power of cell-life, our imagination often conjures up pictures of future acts, which then predispose us to the committal of these acts. Our brain can also keep a certain future purpose in view; and we term our acts adapted especially when they are adapted to the fulfilment of this premeditated purpose, and still more commonly if they agree with what we have in view.

In Nature also we observe phenomena, which surprise us, because if we men had *so* arranged things ourselves according to our own plans, they could not have been better or more expedient.

This impression is so irresistible that anthropomorphically also we speak of adaptation. And this mode of expression is really so brief and practical that I have already used it frequently; only it must be rightly understood.

In Nature we call everything adapted that is well organised, and almost everything in Nature is thoroughly well organised. In living Nature especially, the conditions of existence are so complicated that everything that is not fairly well adapted is not at all capable of existence; it ceases to live, or it reproduces its kind less extensively (Darwin) than better organised individuals.

And the evolution of organs through exercise (Lamarck) implies a process of adaptation. Thus cell-life really develops as a beautiful whole, with a wealth of adaptations. To trace these out will always be one of the most delightful and pleasurable tasks of Nature-study. And so we continue to employ this picturesque phrase, though really we can only find a chain of causes and effects.

Such modes of expression only become dangerous if we allow ourselves to be led by them into too great a generalization of the idea of adaptation, if for instance, we wish to establish a systematic view of life on this conception of adaptation, for only too often that runs counter to experience. I have gone so exhaustively into the subject of the adaptation of the mechanism of erection, only because I must refer in so many other places to shortcomings, errors and non-adaptations of the sexual organization.

If then we finally enquire why we consider the mechanism of erection so well adapted to its aim, the answer must be that we have in mind the guarantee of the desired result, for through it we are so absolutely driven to coitus, and cannot effect coitus without it, whereby reproduction of the species is the better guaranteed. For fertilization is the principal factor in the preservation of the species.

But the answer may be extended to all useful results, such as: increase in blood-pressure, intensification of our vital energy and the joy of living! For all these things are also factors which afford effective help in the struggle for existence. Above all however, one should be careful not to imagine that the one excludes, or ought to exclude the other.

It is however literally correct to speak of the purpose of our sexual life, as far as we mean thereby our human deeds, which should always be well thought out. And here also it is true that we scarcely ever have only one purpose in mind; the action only ripens when several motives work together. Thus we are led to copulation through our sexual impulse, i. e. through the above described antagonism; or by the wish to render each other mutually happy, or in the hope of producing children. And all these motives do not by any means exclude each other; and ultimately we use Nature to attain our own ends.

We do not desire to limit ourselves in this work to the question of the reproduction of the species, as though that were the only purpose of the sexual life. This has already been done too often. On the contrary we now want to study first of all the primary effects of sexual excitement: lust and love, both motives that have been scientifically far too neglected up to the present, and which are yet of vital importance for

our life's happiness and conduct. By this restriction the book may lose in completeness, but even within these bounds there is abundant material.

If we enquire the purpose of our sexual life even with this reservation, we scarcely dare give an answer, on account of the vastness of the subject. One might just as well enquire after the purpose of life itself. Life is a search for self-expression, and sexuality is only a more intense expression of life. We will not worry further with the question; what is the purpose of life? As in all problems, the sexual life must have a purpose of its own, so that it may become as pure, as strong, and as beautiful, as possible.

24. *Derivants and Blood-letting.*

In the last chapter we refuted a very common error of the past, when people always used to enquire the purpose of Nature, and were then often led to form the most outrageous hypotheses. Now we shall cast a glance at the old medical ideas of the past, of those days when our colleagues still wore perukes and birettas.

First and foremost there were the learned, speculative philosophers, who, according to the particular school to which they belonged, endeavored by one method or another to remove the "morbid matter"*, or if they could not manage this, to divert it to other portions of the body, preferably the surface of the arm or leg, where it could not do so much damage.

This they effected by the employment of counter-irritants or derivants, for the diversion of the humours, relics of which may still be seen in the popular use of *setons*, *moxas*, and *blisters*. And when all this failed, they flew to blood-letting, a method by which they thought they could actually see the morbid matter flowing into the basin, which a member of the family usually had the honor of holding.

Was this all useless? Many of these methods certainly brought relief or cure. If you doubt it, ask your grandparents or great-aunts! When I was a young man I knew old people who heaved many a sigh as they remembered the good old times: "Ah, yes," said they, "folks don't do these things nowadays, but they always used to do such a lot of good!" But times change; our patients expect quite other derivants for their relief from us: watering place after watering place, operation after operation. These do good too, only they are rather more troublesome and expensive. In reality it was not a removal of "morbid matter", but an inflammatory process that was concerned.

* We may here remark for the benefit of the layman that in a great many diseases there is no question of "morbid matter". Many ailments are only functional derangements of the activity of the organ, e. g. a *hypertrophy*, i. e. *excessive*, or *atrophy*, i. e. *defective*, development of one or more organs.

In regard to the four cardinal symptoms of inflammation: *rubor, calor, dolor, tumor*, (redness, heat, pain and swelling), these symptoms of congestion would be favorably influenced by this method, and if in such cases it was possible to excite symptoms of congestion in some other part of the body, then the redness, heat, pain and swelling in the morbid part were relieved.

We can now understand the success in their own day of our historic predecessors, as well as the fact that nearly all of these methods have fallen into disuse. We know now that congestive conditions are not so much dependent on the quantity of blood as on the innervation of the vessels. At present we possess much more effective methods of controlling these vessels, and increasing or regulating the blood pressure, and of relieving spasmodic contractions of the vessels. Besides the foot- and hand-baths which were then known, we have all the modern methods of electro-, mechano- and balneo-therapy, as well as many antipyretic and sedative drugs for internal administration which were not then dreamt of.

Above all, we are now much better acquainted with *etiology*, the *causes* of disease, and consequently with the principles of antisepsis. And therefore modern medicine lays more stress on prevention than on cure.

We strive first of all to prevent disease (prophylaxis), and then if disease occurs, to lead to a cure by the use of hygienic methods.

We do not want first to fall sick and then to allow ourselves to be tortured. On hygienic grounds we are led to regard the rush of blood to the sexual organs and their erection every time as a physiological derivant against all other congestive influences; while finally nocturnal emissions, and above all normal copulation, acts as soothingly as blood-letting. The latter is also accompanied by a feeling of faintness, which was formerly interpreted as a sign that enough blood had been removed. It is just this soothing relief of tension which does us so much good, in contrast to the irritating effect of masturbation.

Medical science is often shamed by Nature, which so frequently does things more simply and better than we can by artificial methods. But unfortunately not less devoid of

danger, for one can also give way too passionately to sexual pleasures, just as some people in former times had become so used to bleeding that it no longer had the slightest effect on them.

We may remark in passing that we find an analogous relief of tension to that formerly obtained by bleeding, not only as a result of exercise of the sexual functions, but of the other two secretory functions.

For instance we may feel greatly relieved after a thorough urinary or intestinal evacuation, and if congestion or inflammation has been present, the increased blood pressure of the affected part will more or less disappear as a result of the evacuation. In the seminal secretion the evacuation takes a secondary place; the innervation of the vessels is more strongly influenced.

On the other hand we can now better realize why asceticism and denial of the sexual life are commonly compared to a stagnant pool; while normally functioning sexual life stimulates us ever afresh, like a running brook always fresh and clear, because through it the blood pressure varies healthily each time, and so the blood is constantly refreshed.

While not every girl unhappy in love dies of wasting disease, it cannot be denied that a starved sexual life may lead to all sorts of illnesses, dyscrasias and scrofula, or at least may act as a predisposing cause of these.

We physicians see this only too often. On one occasion at least I had experimental proof given me. I remember the case of a young fellow of good and pious family, whose medical attendant I was. He was terribly scrofulous and was persuaded by some of his friends to try sexual intercourse as a remedy. He did so, and the experiment was so strikingly successful that his parents who knew nothing of the matter, were agreeably surprised at his appearance, as they told me themselves. Unfortunately he had sought the remedy in the most dangerous way in prostitution, with the consequence that he got acute gonorrhea. He came to me for treatment, and he told me the whole story in self-extenuation. He recognized too late that in this case the remedy was worse than the disease, as vivisection is more useful to science than to the animal experimented on.

25. *The Biological Significance of the Massage.*

Since the times we have referred to, medical science has progressed in other directions as well. Once upon a time the "humoral" pathologists thought that metabolism took place in the body-fluids, the "solid" pathologists in the body-tissues; some thought the heart, others the liver, to be the source of our bodily heat. But we know now that the real units that compose our body (see chapter 7) are the cells, which have been built up, like the stones of a great house, into a composite structure. Real metabolism, especially oxidation, occurs in every separate cell, while the circulation of the blood serves as a means of transportation.

As we have frequently observed, the circulation of the blood is very actively augmented by sexual stimuli, whereby all chemical processes in the cells are immensely increased. The process of oxidation is specially stimulated by it, as we shall further explain in the next chapter; but before doing so we must first settle a difficult question which is often overlooked, although it merits special attention in this connection.

Just as in public traffic the heavy vehicles cannot stop at every single house, so our bloodvessels cannot bathe every single cell. To repair this omission, the individual cells are bathed by the lymph, which acts as a connecting link between the cell and the blood. This lymph is not subservient to the circulation, but is subject to variations of pressure which ultimately determine the intensity of our metabolism.

These variations of pressure are of two kinds: osmotic or mechanical. The osmotic variations of pressure are caused chemically by the amount of salt, sugar etc., contained in our food. These substances possess a high osmotic coefficient. The mechanical variations of pressure, on the other hand, are caused by every mechanical movement of our body — either active or passive.

The production of these mechanical variations of pressure we call massage. Artificial massage has long been known as one of the most powerful of remedial measures to stimulate metabolism after a blow or fracture, in order to restore the function of the injured organ, for though continuous pressure

is very injurious, rapid alternation of pressure and non-pressure is very healing, and for this reason massage always works wonders when one of our limbs has become stiff through immobilisation or constriction. Also when the tissues are infiltrated with lymph, pus or blood, not only can this fluid be dispersed by massage, but ultimate resorption greatly facilitated. Furthermore atrophied muscles become better nourished as a result of massage.

Because massage is constantly indicated for an ever increasing variety of cases, — (savage races have successfully used massage from the earliest times) — the opinion has recently gained ground that it is not a special method of healing, but one of the principles of life.

We can best realize this if we notice how strongly the formation of our bodily organs is governed by it even in the embryo. Just a few examples.

How do the rounded curves of our body originate? They are thus rounded because we develop in the rounded interior of the womb, and this is rounded because the waters, like all fluids, exercise an equal pressure on every part of the uterine wall.

At the third week after conception four protuberances appear and develop into limbs. These at first are only jelly-like; then this jelly becomes connective tissue, and finally the inner portion forms cartilage, in which the bony tissue develops later. While all four extremities floated in the waters, their subdivisions, according to the principles of massage, were so formed that in the upper-arm and thigh, that is in the parts least exposed to movement, only one single bone was formed, in the fore-arm and leg, two bones, and in the wrist and ankle a compact row, first of three and then of four small bones; and only quite at the end, when movement was least interfered with, the extremities divided into five fingers or toes, which also became subdivided into mobile parts.

At the terminals of all these separate parts, where the cartilage had not yet been entirely converted into bony tissue, the surfaces in contact were fashioned into polished joint-surfaces, partly through the effect of pressure and partly through the growth-stimulating effect of massage. And yet the extremities in their entirety were still surrounded by the

remains of their primordial connective tissue, so that all joints consist of articular cavities provided with joint-capsules.

The surfaces of these articulations are concave on their less mobile side, i. e. the side nearest the body, and convex on the freely mobile distal side; for from the freely moving part the edges, and from the less mobile part the middle portion, will be more worn away.

The farther from the body, however, the less strongly are the surfaces hollowed out, and the more do they resemble a flat surface.

Later on in our lives, through continued immobility, a joint may not only become absolutely stiff, but the whole articulation may in time disappear, if the physiological massage which is the consequence of the natural use of the limbs, has been lacking too long. And vice versa if a fractured bone is not immobilised long enough, and even the slightest false mobility persists after healing, then the false massage of this false joint may in the course of time develop a real joint, which is not only useless at the particular point, but even harmful.

Thus in microscopic cross-sections of the bony tissue of one of these convex joint-surfaces, it may be seen that as a consequence of the change of pressure due to natural massage, in this bony structure the finest crossbeams are so arranged, like the steel girders of a railway bridge, that a maximum resistance is obtained with a minimum of material.

These few examples suffice to show to some extent the fundamental importance of massage. With every movement of the body, changes of pressure occur, and the more energetic our movements, the more will every part of our body be subjected to or relieved from pressure, which constitutes ideal massage. And from this it follows that just those muscles and organs which have most exercise, develop the most strength. All growth, all muscular education, all individual development* rests on this principle.

And now we come to the application of this principle to

* These acquired advantages are, as far as we know, not transmissible by heredity, as *Lamarck* thought; but on account of the continuity of the different generations, i. e. because each generation is produced by the preceding one and grows up with it, this principle is still important as a factor in evolution.

our problems. When I speak of massage in regard to the sexual life, I do not mean only the caresses and embraces usual to lovers, or the moment of the act of copulation itself (see chapter 21) as the climax of passion, but above all the energetic stimulation of all our vital functions in this beautiful period of our lives.

Who does not know tedious people of no importance who contrive to do everything with a minimum expenditure of energy? They do everything so that it just suffices, but always with the minimum of self-massage. These people are predisposed to anaemia and scrofula; physically and mentally they are cripples. We can best realize this by gymnastics in a room with dumb-bells, or still better without any apparatus. If we do this with slack muscles, we shall produce no energy; but if we do it energetically, and with our muscles as tense as possible, then we shall feel ourselves revived and our strength permanently increased.

Of course, in the economic field it is always a good idea to produce a maximum effect with a minimum expenditure of force; but in the workings of living Nature the matter is not so simple.

A young, healthy, and observant child will soon notice how well he feels after strenuous muscular effort, and so he will unconsciously render all his bodily movements as easy and powerful and bold as possible, which looks so attractive, especially in the young child. It provides him with a store of energy and permanent health for the future.

But this surprising joy of living is generally lacking in the hobbledohoy period. The fire of early youth, when everything had the charm of novelty, has died out. For as soon as love awakes in the young man, a new life awakes in him also. Now he wants to display his strength, and takes a pride in his powers. He wants to win his chosen one, to be admired and honored by her. He is zealous in his efforts to meet her again, perhaps gets up early in the morning so that he may see her once again before going to work. In all his actions he wants to surpass his companions. He wants to strike out in the world so that he can found a family with her. He spares no pains.

So through the ardour of the sexual life not only our circu-

lation, but also our physiological massage is set in motion, so that the increased energy of our circulation really benefits all the cells of our body, and the metabolism is stimulated in every individual cell.

The same thing applies to our breathing*.

In the fresh air we breathe deeply and slowly, so that our lungs are not only thoroughly ventilated, but thoroughly massaged. If however, we are breathing in a heavy, dusty atmosphere, our breathing becomes quicker but more superficial, and the natural massage is therefore decreased, especially at the apices of the lungs, because these lie furthest from the diaphragm, so that in the course of time there is a tendency to necrosis (disintegration of tissue), and particularly a predisposition to tuberculosis.

In contrast to this, let us think of the influence of sexual excitement with its breathing deepened from pleasure and delight, like a fire that burns with heightened glow, and we shall see how powerfully this new stimulus intervenes as a massage-stimulus of our physical and psychical life. And each time that engaged couples can embrace, or married couples have the joy of falling in each others arms, these are only the concluding chords of this ecstasy of love.

Everybody who has experienced this, knows its vitalising effect. With the young girl this develops more internally, and therefore more intimately and lastingly. Although her inner impulses lie more deeply hidden, and she herself may not recognize their existence, they work all the more surely in her on that account. The improved massage does not fail in its blessed effect, and its climax is crowned in a happy marriage.

In conclusion I must touch on one other question in this connection, — a most delicate one, because on this point every man has his own opinion, often quite unfounded and so all the more obstinate.

I was often asked as a practitioner whether intercourse during pregnancy is not an abomination. This question is not

* Under normal conditions the heart-beat and respiration keep pace with each other; when this is not the case it is a very bad sign; in the dying it often means that the end is near. Thus also typhoid and meningitis may be recognized by the pulse being too slow in proportion to the temperature.

so important as it may appear, because in the early months one is not certain about the pregnancy, and in the latter months all intercourse is excluded by the increased tenderness. There still remains the intermediate period, if the wife still feels fresh and well. If then both partners want to have intercourse, (and this desire is quite normal), let them be guided by the general principle: "Live as hygienically and reasonably during pregnancy as at any other time".

By referring to what we have said above, the reader will easily see that this is good advice, not only for the mother, but also for the development of the foetus.

Why should not the child of a merry young mother be as lively and strong in all his bodily movements as she? Not only because the energetic mother will play and romp with him later on. Oh no! Long before birth, whilst they both belong so intimately to each other, every little step, every abrupt movement of the mother's, finds its echo in the body and soul of the little child; so why should not her sexual impulses and movements also have their influence?

In the later months of pregnancy the child will produce a lively local massage with his own energetic movements; for the better development of his own little body, and to prepare the mother for her most trying moment. And who is not reminded by this, of the often marvellous cures of THURE-BRANDT massage of the internal organs.

26. Increased Vital Energy.

If we enumerate once more all these sexual stimuli which are produced by secretory antagonism: congestive symptoms, deeper breathing, increased massage, the excitement of our entire nervous system, then we obtain a combined impression of increased activity of all our vital functions, that is to say an increased vital energy, which is indeed difficult to measure, weigh, or count, but which must ultimately culminate in increased oxidation.

It is not simply figuratively, but empirically that we speak of warm love and glowing passion. Sexual stimulus excites an agreeable warmth, which glows in our faces. We may imagine on the one side a fire on the hearth that burns with a lively flame whenever it is stirred up, and on the other one that has nearly gone out because it has been left unattended.

Fortunately the increased oxidation and the consequent increased heat-production caused by a sexual stimulus never reaches the pathological degree which we call fever*; although when there are dramatic complications one might well speak of feverish excitement.

And yet this increase in the total amount of our bodily heat is greater than we should imagine, if we know from the study of physiology how very constant our body-temperature is; although here only the internal temperature and not the temperature of the entire body is meant.

The first is strikingly constant and just the same, whether we live in the tropics or the polar regions, whether we are plentifully nourished or ill-fed, and whether we are depressed or excited; the internal temperature of our bodies only varies within certain narrow limits. This is one of the finest examples of adaptation of the living body. As soon as we are affected by cold, exhaustion, haemorrhage or fright, our skin-capillaries contract more and more as may be necessary, so that all the external parts of our bodies are enveloped in a constantly deepening layer which prevents further cooling. On the other hand, if we become heated or excited, the blood

* In chapter 5 we endeavoured to draw a detailed parallel between sexual new-formation and inflammatory new-formation.

flows in increased quantity to the surface of the skin, so that a normal cooling-down immediately takes place (see chapter 55).

We see a good illustration of this principle in the freezing of a pond in winter, when a crust of ice is formed on the surface. This, being a bad conductor of heat, allows the water beneath to maintain a constant temperature so that the fish may continue to live, if they only get enough oxygen, for instance, by means of the reeds around the bank.

And on this account the thermometer does not assist us much in our judgment of the total bodily heat. It is unfortunate that *Pettenkofer* of Munich never tried the experiment in his air-bells for the estimation of oxidation, of comparing the oxygen consumption and CO₂ production of two couples, the one at the height of love's ecstasy, and the other asexual, "cold right through to the heart", although he often tried the experiment with two people at a time, one active and hard at work and the other at rest. And the difference was enormous!

Empirically the rise in our total body-temperature caused by sexual stimulus is not recognizable. The sexual life excites in us an ardour almost surpassing the fire of early youth. Even the birds acquire a brightly coloured plumage at mating time, and many insects also, when they swarm out to breed. And for this reason we are always glad to see rosy cheeks on our young folks; not because we are so fond of red, but because it denotes a warm temperament. When we are old we are pale, and in death white and cold.

Of course we may also be excited by many other motives, and all these may appear along with the sexual ardour. The one motive does not exclude the other, on the contrary they mutually increase each other. But at the same time the sexual stimulus is one of the mightiest of all, because it resides in our inmost being and continually awakens afresh.

For not only does the glow of love burn within us every time the sexual impulse wells up in our own being, but, because we live in a world full of lovers, also each time we see a person of the opposite sex or a pair of lovers. We already anticipated these feelings when we were children. Even our daily work seems lighter when we are working with the other sex. Just as when the light shines it illuminates all things, even the most insignificant, so the sexual life sheds warmth

and color on all around us, even the most ordinary things. And the love we observe amongst animals awakens the same feelings in us; and every flower speaks to us of love. The soul sensitive to love is like the clear mirror of a pool which reflects the sun not only once, but sparkles a thousandfold with the rippling of its waters.

The strength of the sexual life is so great that it is not a deficiency that we have to fear, but an excess! For sometimes this impulse may dominate us to such an extent that it threatens the whole happiness of our lives with disaster. For this reason we always stand in need of self-control; and to this subject we shall devote the whole of the third part of this work.

Just one more observation. The principle "nothing is made from nothing" also holds good in the sexual sphere. Just as we can produce fire by rubbing two articles together, but must rub very vigorously, so also we cannot obtain the increased warmth and energy without effort. We have repeatedly seen, and we shall see further in the next chapter, what numerous hindrances and difficulties the sexual life has to contend with, a resistance which must be overcome both in the material and psychic sense. This is the hardest task of life for adults; for one must be adult in order to be sexually mature. Only now can we thoroughly understand how greatly the sexual life may increase our energy: sexual energy is proportional to sexual resistance.

27. Material Hindrances to Copulation.

We have constantly mentioned all kinds of strong obstacles in the case of the seminal secretion, in contradistinction to the secretion of urine. The late beginning of this function, the viscous consistence of the secreted product, the minute orifice of the seminal canal, the spasmodic increase of the muscular antagonism, and finally the accessory stasis of the circulation. All these internal resistances excite us to the highest degree and drive us either to despair or to the height of ecstasy.

There is also a further great difficulty, because to perform this function correctly we need a partner*.

A whole army of difficulties must be surmounted before we can find a person who will put up with all our little ways; and what a lot we have to go through before we have reached the point where we can make each other quite happy!

But even at the last moment when happiness seems to be in sight, we find that Nature has placed a hindrance in our way, which although very small is very confusing. According to our views, the genital organs of man and woman are very badly placed. We have already seen (page 61—62) that the genital canal in the male has its opening in the front part of the body, while in the female it is quite underneath. That is not convenient. Besides which, in woman not only is the entrance to the canal hidden between her thighs, but it is further closed by two pairs of lips, like double folding doors.

Connection can therefore not take place unless the two partners assume a very unusual position. And for this reason no absolutely *correct* position for the accomplishment of the act exists. On the contrary, in various nations and races all sorts of possible and almost impossible positions are found either usually or exceptionally: standing, lying or sitting, facing each other, or both facing the same way. But always in a forced position of the body. Only one thing is constant, and that is that the woman must open her legs as far as possible**, so that her genital fold shall become a genital orifice. Nor must the woman lie with her head and shoulders

* We shall treat of psychic hindrances, such as frigidity of the woman, or her dislike of everything sexual, in chap. 57.

** Hence the idea that it is very immodest for a woman to spread her legs apart in public, rather should she walk about in a long dress as if she had no legs at all! Many useful activities and healthful exercise have been kept from her for ages, e. g. horse-riding, as though it was impossible for her, whereas it really presents no difficulty.

too high, nor too deep in pillows, but rather with a cushion under her loins.

As ERNST KLOTZ says in "Das Welträtsel Mensch", (published by R. Giesecke, Dresden 1921) the position of the bodies is more rational among the higher animals, particularly those living in the wild state. In our domestic animals on the other hand we may often observe the most desperate attempts and incredible attitudes in the effort to achieve the desired end; e. g., the dog, elephant, etc.

It is therefore perfectly clear that such difficulties occurring at the last moment are highly adapted to increase the excitement and the passion to madness and thus precipitate the climax.

There is another category of hindrance of a more accidental nature though more difficult to overcome, to which one may be exposed. I refer to the resistance offered by all possible forms of narrowing of the orifice of the female genital canal. The vaginal entrance is often only a trifle underdeveloped; an infantile stage of development, that soon corrects itself. Sometimes too, the entrance is more or less obstructed by a small mucous membrane, a slight arrest of development, similar to the tongue-tie so often seen in new-born children. Sometimes there is a more resistant cartilaginous growth which can only be removed by operation. In very rare cases the orifice, or the entire vagina, may be absent, and then one has to be content with caresses or other methods of sexual satisfaction.

The slighter variations generally disappear of themselves during childhood, if only the child is kept clean, especially in these parts. Otherwise they are overcome by the use of cleansing injections, which the adult maiden should always practise after each menstrual period. If this practice is neglected however, everything goes wrong at the first attempts at connection. So the adaptation of the organs to each other, which we mentioned on page 75, should be constantly maintained by each new generation, and constantly improved.

In very serious cases of course a doctor should be consulted; but usually it is easy to distend the soft parts by gradual and gentle stretching. But this should be done with great care, otherwise tiny cracks may be produced which in healing form scars, so that the constriction of the orifice becomes even worse, just as happens with the boys' prepuce (see chapter 12). This wound-cicatrization with constriction of the orifice explains many stupid stories concerning girls who have become pregnant and then at the time of delivery it was seen that they had no proper entrance at all to their genital

canal; for after their rape, as the wounded surface healed, the orifice grew firmly together.

African slave-dealers often make their female "goods" saleable as virgins again by an operation that artificially constricts; and amongst certain races the bride is regularly made the proper size for the bridegroom by operation. In other tribes and also with us in Europe the presence of a membrane which partly occludes the orifice, is accepted as happy proof that the maiden has never had connection, and is therefore termed the *hymen* or maidenhead; while the absence of this obstruction awakens suspicion of sexual manipulation, if only masturbation, having occurred. It has however been thoroughly proven that an intact hymen may still be found after repeated cohabitation, and also that many absolute virgins have no hymen at all. In China and India, and amongst many Indian tribes of Brazil and Paraguay, the hymen is unknown, because the genitals of little girls are so thoroughly cleansed from birth.

I have dealt with these constrictions of the vaginal entrance in such a detailed manner because from pure ignorance they make so many marriages a torture, when they give rise to tiny tears and abrasions in the mucous membrane at coitus. Although these abrasions and tears may be extremely minute, if they are not given rest and opportunity to heal, they will through repeated connection never remain uninfected; and in the course of time may become so fearfully painful that at each new attempt at intercourse screams of despair will break the silence of the night. Consequently this defect, so insignificant at first, may not only mar the inauguration of connubial bliss, but the terrible pain that ensues as a result of their neglect may cause an aversion to sexual intercourse and a hatred of the husband which will not entirely disappear even after surgical intervention has remedied the evil.

Spasmodic contractions of the occlusory muscles which are situated around the orifice of the vagina (see page 59), may render connection painful or impossible, and in rare cases interfere with withdrawal after the act is concluded. So that we see that there are pitfalls here.

But even without any mechanical obstructions the woman may suffer from hyperaesthesia (excessive sensitiveness) of this organ which makes it impossible for her to allow her husband to approach her. If this nervous affection develops only as a secondary symptom, as a result of the above mentioned local suffering, local treatment is indicated and

successful. If however it originates in neuroses which proceed from the central nervous system, as is often the case in hysteria, then the condition is much more serious and not always curable.

I do not want to leave the subject of these painful hindrances without again referring (see page 34) to the most painful of all which we encounter as the normal consequence of sexual intercourse, I mean the martyrdom of child-birth. Among savage races normal parturition occurs just like any other normal physiological function; if however malformation of the pelvis presents an insurmountable obstacle, the mother and child both die, and the deviation is not reproduced.

However, with our ever-increasing civilisation and the greater perfection of our means of assisting parturition, this natural selection tends to disappear; and furthermore owing to our unnatural manner of sitting, especially during long hours at school, not only the normal development of our internal sexual organs, but also that of the bony pelvis is still more fundamentally spoilt. This has increased to such a degree that a painless delivery is an exception*, indeed, for many centuries now, the pains of child-birth have become proverbial. The words of the bible, that the pains of child-birth are a punishment for our sins, have not prevented us from committing the sin of unnatural education. And so the birth of a new human life, this most joyous of all events in living creation, has become a hellish martyrdom for the mother; and the best developed children** can scarcely ever be born alive.

The pain which we once caused our mothers should make it a point of honor with us to suppress this horror for the future. It is unjustifiable, calmly to continue with this cruelty and degeneration of the race. As this has developed through carelessness in the course of generations we could with care bring about a great improvement in the course of a few generations. And yet systematic efforts to attain this object are not always made. Only lately the training of our youth,

* Indeed we can entirely relieve the most painful stage of parturition by intervention under chloroform. This is not sufficiently practised, but with such palliatives the cause of the trouble is not removed, but only maintained and rendered graver for the future through the abolition of natural selection. Twilight sleep through scopolamine is far too dangerous and only relative insensibility is produced so that the pain is forgotten; this is a poor consolation.

** The greater mortality of little boys compared with girls (see footnote on page 33) must in the main be attributed to the difficult births of the boys, as on the average boys are somewhat bigger than girls.

especially of our girls, begins to be a little more rational, and at least the beginning of rational selection can be seen when those women who have survived unusually difficult confinements take care themselves through use of preventives that they do not fall again into this desperate condition. In this way they will not further reproduce their own defective tendencies.

The more unprejudiced our study of the sexual life, the more must the obstacles mentioned in this chapter yield to the light of science.

So far we have only mentioned material obstacles in the woman, but there may also be some on the man's side. I refer here only to impotence.

The female organism is always capable of cohabitation, the male only during erection. On account of the congestive effect of all skin stimuli and mental pictures which take effect through reflexes from the brain, (see page 27), the man can to some extent control this unconscious function. Indeed it is easier for him to cause an erection than to terminate a spontaneously occurring one.

However he does not always succeed. There are many men who never get an erection (absolute impotence), and cohabitation is impossible very often because the erection does not occur at the right time or because it does not last long enough (relative impotence). In all these cases both partners are disappointed; and while the wife can with some astuteness hide her frigidity, no evasion is possible for the husband, and the more worried about it he becomes, the less likely he is to succeed.

On the wedding night especially, relative impotence is a common occurrence, and is then mostly caused only by the unusual nature of the situation. Generally it is, like the tightness of the bride, a proof of chastity; one does not so soon master the technique of copulation, and easily gets lost in the rosette of folds forming the vulva*.

The performance of even the simplest functions requires some practice. How long, for instance, it takes for the young mother to get the newborn babe to take the breast for the first time.

* When a doctor is going to examine a woman, he finds it easier to introduce his instruments if he begins the introduction on the posterior side, as here there are only *two* folds, and in their neighborhood the sensibility or liability to pain is minimal.

This is an appropriate place to refer to a quite mistaken idea that it is necessary for the first attempt to be made on the wedding night. This over-haste may spoil everything, even all future married happiness. Especially if the couple have not confided enough in each other during their engagement, a too abrupt approach of the bridegroom may shock the bride, and even wound her feelings very deeply. It is indeed quite overpowering to think that they are facing each other now without the least restraint. External caresses, if impulsive enough, will be quite sufficient on this occasion to produce the desired satisfaction for both parties. The next time one can go a little farther, and then they both experience the real climax of the pleasures of love, and their love will only then become an ideal love for life.

Even if the relative impotence lasts more or less during the honeymoon, there is no cause for anxiety. The remedy is simple enough. A period of abstinence mutually planned and honestly kept will almost always suffice, and the period of abstinence will scarcely ever be observed to its end. As the result of habitual masturbation there may sometimes be relative impotence on the husband's part or frigidity on the bride's, but these generally disappear of themselves in time, if only calm and patience are exercised, and the old habits are not resumed.

Relative impotence due to advancing years (see chapter 60), constitutional disorders, mental strain owing to worry and care, or resistance on the wife's part, etc., is very frequently complained of. These are cases in which the physician can more readily console than cure.

Absolute permanent impotence right from the commencement of married life is rare, because the young man in such a case must be aware of his defect, and should not have married without making his fiancée acquainted with the facts, and coming to an understanding with her. Then at any rate a physician could be consulted as to whether he could do anything by improvement of the general health. Fortunately the most passionate of wives can be sexually satisfied without regular copulation, an act for which many women are not at all adapted.

Only in the most unusual cases would one be inclined to effect a testicular transplantation or other rejuvenating treatment by Professor Steinach's system (see page 34). Such a serious undertaking is especially not indicated if the trouble is a symptom of approaching age, or a premonitory symptom of

a constitutional affection. In such cases the impotence is a sign from Nature that mental and bodily rest is necessary.

In desperate cases of frigidity in woman, similar operations may be undertaken for the transplantation of ovaries. But what should we say, if after the husband having been very disappointed over his wife's coldness, the operation should have such a marvellous effect that in spite of all his efforts he now finds himself unable to give her all the pleasure she wants!

28. Social limitations of the Sexual Life.

In addition to the internal resistances and physical obstacles to which we have referred, there are also a number of economic obstacles which must be removed, and through which in many affectionate people passion is stimulated to its utmost degree.

The more traditionally the institution of marriage is organized, the more is the free choice of a partner systematically restricted. Even in pre-historic times it was considered incestuous to cohabit with very near relations, while intercourse with persons too widely different from oneself was naturally out of the question. So from the earliest times sexual intercourse has been naturally limited by exogamy and endogamy; although these limits varied extremely in different races and tribes. Later, the economic conditions which tended further to widen the differences between different races produced a far more appreciable limitation of the possibilities of marriage, and now as the reverse side of prostitution, innumerable affectionate people must remain single. Yes, even in married life there are still many conditions which if the marriage is monogamous exclude sexual intercourse, for instance the menstrual periods and the time just before and just after a confinement.

Besides which, there are special categories of people who are wantonly condemned to celibacy, such as priests, officials and women teachers; while others from an exalted ideal, look upon sexual abstinence as something exceptionally praiseworthy. In the course of time abstinence before and even in marriage has become a categorical commandment. The pro-

duction of illegitimate children was regarded even in historical times, especially among the upper classes, as something not at all unusual or dishonorable; but it has now become an increasing cause of despair.

In consequence of all these categoric obstacles the sexual impulse, especially in the most respectable classes, may increase to madness and become an uncontrollable passion so that ultimately one renders oneself unhappy or brings others to misery. A passion thus terribly roused often leads to desperation and suicide. *J. J. Rousseau* and *Fourier* long ago remarked that we should not despise the passions, as such, but rather the fact that we men had neglected to direct them into the right paths. When a river is dammed through ice-packs, it may overflow and ruin everything around, this self-same river that originally had watered and fertilized and rendered lovely the whole region.

When we have come to a proper understanding of this whole chain of cause and effect, then we also know precisely in which direction we must seek salvation, in order to prevent this immeasurably increased passion from leading to such despair in future. The ascetic ideal, however useful and necessary it may be for early youth and old age, has always made things worse for the vigorous adult and will certainly continue to do so. Throughout the centuries of our era, man has in vain sought to enforce this solution.

Suppose we were to give up further striving after the impossible? Suppose that at last we consented to be so reasonable as to learn from Nature? Suppose we could at last all begin to work together earnestly so that every individual who has reached manhood and who longs for love could listen to the demands of Nature and bring his love to expression without anxiety or remorse? This should henceforth be the aim of all sexual reform! Instead of a destroying fire, passion would then be converted into the friendly sunshine of our lives.

Falling into the other extreme the question has been asked: whether through unlimited indulgence the sexual life would not entirely lose its passionate character? It has been asked: if from puberty the exercise of the sexual function was always enjoined as a duty, would this function then not be rendered as free from passion as, for instance, the secretion of urine now is. It is a fact that in the Middle Ages there were some would-be saints who actually gave themselves up to unbridled intercourse in the hope of killing the lusts of the flesh.

This is a desperate measure, and one fore-doomed to failure,

as everyone knows who has read the foregoing chapters attentively. All these irritating obstacles which lie in the way of the seminal secretion cannot be removed, and will always cause this function to retain its passionate character. And if we try to carry that method so far that it paralyzes the function by exhaustion, then indeed the remedy would be worse than the disease.

But, as human beings, we are not satisfied with a merely animal appeasing of lust. We claim higher ideals, and before these are attained a great deal of self-control and self-denial must be exercised.

The greatest difficulty however lies in the following. As we expect it to afford us satisfaction, it should be not only a suitable and permissible satisfaction, but, since the material foundation of this function is a regularly recurring urge, the satisfaction must also take place regularly and periodically if we are to obtain the full benefit of it.

A solitary experimental connection is for a normal adult rather tantalising and an aggravation of the evil. On that account it often happens that serious symptoms due to abstinence may be observed in persons who, as we know full well, have coitus now and again.

Everyone does not realise this in his own case. He who longs in vain for relief, always thinks that satisfaction on one occasion would save him*; he does not demand more for the time being. So with Faust, who pawned his soul to the Devil for one single moment's pleasure!

Yes, then one has really "gone to the devil"! And so many a man is attracted like a moth to the candle flame, in the hope of salvation.

The problem is almost insoluble, because even in our cool climate we are sexually ripe at an age when the body has still scarcely reached its full development, and certainly not its full powers of resistance, and in addition the economic condition of the individual, owing to the complicated nature of our social conditions, will not be at its best for many years.

* We might represent the passion-curve by a zig-zag line which falls suddenly after each act of sexual intercourse and often sinks below zero, but rapidly rises again. Through impure sexual intercourse the curve falls from disgust so far below zero, that one wishes to change the object of one's passion with every new rise of the curve. In pure, more ideal love however, the curve approaches more and more to a constant straight line; even in marriage, both parties should reflect that after every connection their mutual love should blossom afresh; every time a fresh bud that bursts into a more lovely flower than before.

And yet even in these early years of the transitory period, the impulse makes itself felt so categorically and so imperiously!

The task for the parent and teacher is hardest of all in these transitory years, when they seek to direct the love-life into the right path. No stereotyped generalizations and traditional commonplaces are of any use here; each case must be studied individually; and we should never condemn another because he has acted differently from ourselves. In every case education in love should be ideal, not simply negative, and still less impure.

29. The four most important categories of sexual satisfaction.

If we want in the waking state to experience all the pleasures of love and passion, with the highest altruistic ecstasy, this is best attained in a licit union of two lovers who mutually love and respect each other, as should occur in an ideal marriage.

And we must once more observe that other function, so that we can understand how much higher this ideal of ethical and physiological satisfaction stands than all others.

What does a loving mother do when her little darling has a strong desire to urinate and weeps because he cannot do so? To relieve the cramps and pains the mother lays hot wet compresses on his little body, gently rubs and massages the abdomen, and does not leave off until the crisis is over and the little one is relieved. Now we understand better why in the sexual life natural cohabitation between man and woman is the gentlest and best of all methods of relieving the tension, not in sleep but in the intoxication of love.

Ordinary, regular intercourse, as it occurs in a happy marriage, disturbs us the least and calms us the most effectually.

It is most astonishing to reflect how Nature has so arranged this procedure that it falls to the lot of both partners to be operator and subject at the same time. After all the preliminary difficulties and obstacles, Nature at last surprises us with the simplicity and easy solution of this problem, because such

a beautiful result is obtained with so little trouble, and even with organs which were already useful for other ends. Thus is actually realized the classical "tuto, cito, jucundo"*, which medical science in the olden times accepted as its ideal.

This mutual assistance of the two sexes, this *heterosexual* mode of satisfaction, is in every respect as well adapted to its end as if it had been prepared for us by a loving mother.

But we do not want to rush on too fast with the realization of this ideal of our age. Before we have reached the point where all these conditions are fulfilled in a happy marriage, we may possibly be for a long time at the mercy of our mother Nature who so often subjects us to a severe trial. Yet at last she takes pity on us. For long before our marriage, the above-named conditions are often fulfilled while we are lying asleep alone and quiet in our beds. That is her time to bring us secret relief**.

During sleep the sexual excitement does not easily attain the excessive degree which frequently occurs during the daytime. The antagonistic resistance is not so powerful, and above all the manifold complications of our consciousness are almost entirely absent. Everything occurs so gently that sleep is not disturbed at all; at most one experiences agreeable dreams. A little congestion can scarcely be avoided in this congestive function, but everything takes place in the best way possible.

With masturbation, the voluntary touching of one's own body in solitude, however, the opposite is the case. For then one is awake; the brain and spinal cord are stimulated and irritated to the highest degree; there is no peaceful rest, no mutual warmth, none of the intoxication of love. One performs this delicate biological function roughly, and becomes so accustomed to crude means, that later in marriage, one scarcely feels any satisfaction from the gentler physiological procedures.

For it is a fixed law that every mode of satisfaction that has become a habit, makes us less susceptible to other modes with other associations. Love, the one essential condition, is lacking, and with it all holiness. Of course, the secretion may

* The remedy should be "sure, quick and agreeable".

** Regarding female erotic dreams, see page 115.

be evoked by means of this brutal act, as by an artificial operative procedure, but it is by no means the beautiful natural function. Before dealing further with the subject of masturbation, we must define the term more precisely. By *masturbation*, which is also called *onanism*, *self-pollution*, etc., we mean any kind of manipulation destined to provoke sexual excitement in oneself. From the ethical standpoint, the solitude and secretiveness of it are typical.

The name comes from *manus* = the hand, and *stuprum* = unchastity, and means sexual impropriety with the hand, or by any other means of massage.

The popular name *onanism* comes quite wrongly from the biblical mention of Onan, (Genesis 38.9), for in this verse a voluntary interruption of the procreative act was referred to (*coitus interruptus**), an act that was considered so shameful in Onan because he thus sinned against the law of Moses. (Deuteronomy. 25. 5—10).

This erroneous interpretation of the story of Onan has led public opinion into error not only in regard to masturbation but also to *coitus interruptus*, as though in each case we were speaking of a mortal sin. Through this fatal error countless people have been led to despair, and instances are not rare where it has led to suicide, sometimes of the most horrible nature, in the hope of escaping from the torments of hell fire.

This psychological anxiety has done more harm through the centuries than any physiological damage due to *coitus interruptus*, and yet well-intentioned but erroneous authorities still frighten young people who practise masturbation, by quoting the story of Onan.

A name that has led to so much error and despair should no longer be maintained. In practice, we doctors employ many different names for masturbation, because it may assume so many different forms. In children it is generally only a bad habit due to improper training; in adolescents obstinacy, brutality, sometimes even vice, or a morbid symptom; in old men frequently a sign of dementia.

A special sub-division is *mutual masturbation*, when the same crude act is practised on another person, generally of

* As a common and still much used preventive method, *coitus interruptus* is often termed *the French method*; but a method was known at the Renaissance in Italy, which was probably identical, and was at that time known in France as *the Italian method*. Goethe refers to it in his translation of the *Life of Cellini* (who lived in the 16th century) Book 3. Chapter 7.

the same sex, (homosexual), a phenomenon ethically quite different, because it is not practised in solitude. If the ordinary masturbator is frequently shamefaced and shy of other people, mutual masturbation leads on the contrary to shamelessness. It is the preparatory school to the brothel, especially when practised on a large scale as often happens in boarding school and barracks. But we shall only speak of ordinary masturbation in the remainder of this chapter.

As a basis for a rational hygiene, it is of the highest importance to study and compare these two alternatives of youth: masturbation or nocturnal emissions.

We have already referred to the distinction between violent masturbation and nocturnal emissions occurring during sleep. This distinction however, is not always so categorical; emissions are sometimes found less salutary; the fatigue or exhaustion due to masturbation may vary within very wide limits. On account of their practical importance, I will now be rather more explicit.

With an emission it may happen that we were indeed more or less stupefied by sleep, but that at the actual moment the whole experience was very closely related to masturbation. And conversely, after long continued abstinence we may while half asleep, masturbate so gently and involuntarily that it takes place like a spontaneous emission, without shock or nervous tension.

But no matter how soundly we sleep, we may feel exhausted and depressed on awaking in the morning after a nocturnal emission. This is often taken to prove that such emissions are harmful, and that prostitution and other such indulgences are much better for young folks.

I do not object to the observation, but I do to the conclusions. All that has been demonstrated is that one feels miserable on awakening while still under the influence of the emission. The causal nexus may however lie elsewhere. Perhaps too much was eaten or drunk the night before, for instance sweet drinks like chocolate, punch, champagne, etc., which cause extreme heat in the night; or perhaps one lay in a constrained position, e. g. on the back, with venous stasis in the cerebellum or spinal cord. In all these cases one may have had a troubled sleep and uneasy dreams, which might well be the cause of the emissions. Therefore, before drawing such unhygienic conclusions in the name of hygiene, one should carefully look for all causes which may have produced

such uncomfortable sensations, whether with or without emissions, so as to avoid them in future.

I have not said that masturbation always has serious consequences. The consequences only become grave when one is the slave of the habit, just as with alcohol; for one can never tell beforehand how much one may be predisposed to them. *Principiis obsta!* From the very beginning we should be on our guard.

It is also true of masturbation that the younger one begins it, the worse the consequences may be. Also, the more violently the emission is induced, the worse it is; and really it should never be a deliberate excitement of the sexual impulse, but at most a final yielding, if the degree and duration of the excitement have become overpowering.

I go a step farther, for Nature is never absolute in her laws. Just as emissions may depress us, so masturbation may sometimes protect us from something worse. It is above all in the sexual sphere that we sometimes meet with the most intricate complications and insoluble conflicts of duty. As compared with prostitution and seduction, masturbation appears to be the lesser evil.

If one finds himself in such a position that he does not feel ethically quite sure of what he ought to do, and after examining his conscience he thinks there is an urgent reason to masturbate, he can then best guard against self-deception by making a rule to allow 24 hours to elapse between the intention and the deed. This then follows the same rule as the death penalty once did; for the difference between murder and execution often lay in the fact that in the latter case a certain time was always allowed to elapse between sentence and execution. Like that old Roman, who when his slaves made him angry, cried out: "Oh! what a thrashing I would give you if I were not so angry!" But after all everyone feels that it would be better if thrashings and the death sentence were abolished altogether.

In chapter 65 we consider the two different methods of treating habitual masturbation.

It is frequently stated that masturbation is much more common in females than in males, but this is difficult to prove because this act leaves no visible traces. At most the experienced physician may sometimes notice that one side of the trousers is more worn than the other on account of the rubbing of the nails of the right hand. Then again, girls are less scolded

than boys for a little sleepiness or a dreamy look which is often the consequence of masturbation.

One only knows the beauty of sexual intercourse, the ecstasy of love, when one can experience this impulse with a loved one who meets it with equal passion. This spiritual rapture may be the principal factor, and it is not necessarily man and woman who feel themselves drawn together; a youth may be charmed by another youth, and how often there is a passionate attachment between two young girls.

There are males who feel themselves attracted sexually only to members of their own sex, and also women who can only have passionate intercourse with their own sex.* This however must always remain an exception, because only the minority of people are so constituted** and persons who are not so predisposed will not lightly renounce the magic charm of the opposite sex with its physiological advantages in the procreative act. And for this reason the over-zealous activities of the moralists and legislators who jealously strive to preserve the monopoly of heterosexuality may be considered quite superfluous. From a material point of view, there is not a solitary method of homosexual satisfaction which possesses the slightest advantage over the ordinary heterosexual intercourse, which can quite well stand competition; and survival in the sense of Darwin's theory by means of descendants is of course quite impossible. It goes without saying that every case of the sexual seduction of children should be punishable, even when this is heterosexual and therefore doubly dangerous. Otherwise however, from a legal standpoint every adult should decide for himself in what manner he finds his own sexual satisfaction; on condition that he does no injury to anyone else and creates no public scandal by it.

Meanwhile public opinion, mingled with fanaticism, considers that homosexual inclinations are terribly immoral, whereas we see every day before our eyes what an endless

* The opinions expressed in the last part of this chapter sound surprising and perhaps shocking to us British, emancipated in our views of sex though we may think ourselves. We must remember that in many Continental countries, not only is homosexuality regarded much more lightly by public opinion, but the law considers it a matter of personal taste and leaves it quite unpunished, except where the protection of minors or the maintenance of public decency is concerned. This is the case in Holland, where Dr Rutgers lives and writes. (Translator's note.)

** This inclination seems only to develop so thoroughly exclusively when the material reasons for it are present (see chapter 4).

amount of immorality and misery are caused by heterosexuality. Although inferior and depraved persons sometimes commit homosexual acts with seduction, prostitution, violence, etc., unfortunately these shocking things come forth out of the realms of darkness still oftener in the heterosexual sphere; and the climax of cruelty and horror, lust-murder, has so far as I am aware been observed as exclusively of heterosexual origin.

And then there is always the fantastic idea that homosexuality only knows the pederastic mode of satisfaction, that is to say the anal instead of the vaginal method. This is of course a custom that is most repulsive to us, but it was very highly prized in antiquity, and at the present time is still held in high honor in many parts of the world. In the oriental view of life, this act was perhaps considered animistically as contributing strength of mind, besides which it has often been intended as a symbol of the most intimate love-union, and felt to be the highest expression of passion. Further in many cases it is only an obsession arising sporadically and originating from childhood, when we watched the mating of animals with astonished eyes, without really understanding them.

But we must not generalize. In regard to all female homosexuals, who are probably in the majority, these theories are not applicable, and we learn from the experience of homosexual men that this *modus vivendi* does not offer so many advantages after all as has been stated.

There is hardly an organ of the body or a method that might not be employed as a means of stimulus and satisfaction, and that will not be used on occasion. Indeed even in heterosexual intercourse anal connection is by no means unknown as a preventive method; so it cannot be regarded exclusively as a characteristic of homosexuality.

Frederick the Great said that every man should be happy in his own way. And if vaginal connection, which has been found the most suitable simply because it is the only method which can not only give pleasure but can also fecundate, will always occupy its favored position, that does not prove that where this method is not possible other harmless methods cannot provide the same delights if only the love stimulus is sufficiently strong.

The essential thing in the sexual function is the contact. Which of the poles of the body it is that feel drawn to each other is unimportant. Psychological rapture is not dependent on such insignificant details.

III.

SELF CONTROL

ETHICAL SECTION.

30. *Introduction.*

The muscular antagonism which we have considered in Part II was only the material substratum of the question; psychically this same conflict takes place with in us as a mental struggle. a struggle which sometimes robs us adults both day and night of our rest and peace of mind, and subjects us to the most rigorous test: shall I conquer, or shall I fail? Like Hercules at the cross-roads.

There is, unfortunately, scarcely any function so little under our voluntary control as the sexual one, which plays so important a part in determining the happiness or misery of our lives, and even the welfare or suffering of future generations.

We deceive ourselves greatly when we men call ourselves conscious beings in contrast to the animals; we have still to strive, before we can be such in reality.

This is especially difficult for us in the sexual province, because the sexual impulse originated in the most primitive times, when we were still but very slightly differentiated from the lower animals. In this respect only the urge of hunger surpasses the sexual impulse; and there are some moments when the sexual impulse is the mightier. Only in this province we are less frank than the animals.

Sexual self-control is not sufficiently esteemed by public opinion, because it is looked upon as something negative. But we forget how greatly, in a positive sense, sexual self-control deepens and widens our love-life. The more self-control we have at our command, the more richly and beautifully will our sexual life blossom out; and this is true not only for individuals but also for the community.

In contrast to an asceticism that would deprive our lives of all happiness, happy and kindly men think that we should be allowed a little tolerance, so that life shall not be a weary waste. A little tolerance for the "jeunesse dorée" after their fashion and for the masses after their fashion; for after all, we only live once. But the new generation is not satisfied with such rubbish; it abhors the brothel with its body-and soul-destroying disease, and its lack of real satisfaction: it

detests alcohol which enervates us, and frivolity with its contamination.

The rising generation demands a solution of the question founded on sound principles; with its full consciousness it requires finer pleasures. Not tolerance, but idealism.

The oscillation between an unyielding stoicism on the one hand and an enervating epicureanism on the other, has undermined the joy of living far too long. The history of the evolution of mankind shows us a better way. Only with gentler manners could love-making be romantic (see Chap. 46); in earlier times when sheer animal desire led to marriage, jealousy, revenge and murder seemed indispensable to self-preservation.

Even now, without a certain amount of self-control, all friendly intercourse between the two sexes which had not marriage as its avowed object would have to be discouraged as dangerous and morally inadmissible, as soon as it had taken on the slightest sexual complexion; for it would thus always be a temptation of Satan, as many pious folks actually term it. Indeed when we entirely lose our self-control we fall from our present domesticated or civilized state (see chap. 11) back to the animal state. But with conscious self-control we become the lords of creation.

How is it that nowadays a girl, even if young and pretty, can go home or make long journeys alone, or fill public offices? This is all only possible because assaults on respectable girls has become quite an exceptional occurrence.

Only in the mutual certainty that the bounds of propriety will in no wise be overstepped, should two persons in sympathy with each other permit the maximum of tender intimacy, such as is generally allowed to engaged couples even in the most respectable families.

And if we imagine this principle not limited to engaged couples, but extended to society at large, how much more Arcadian rapture would this earthly life afford us!

With this ideal before us, let us now study the question of self-control in sexual matters. We would like definitely to decide, in each case with full knowledge of cause and effect, what is good and what is evil, what is permissible and what is not permissible, and we will then willingly renounce

much that at first sight appears so tempting, but which really debases us, the gain for us will be so much the greater. We want to help each other in seeking new standards, and if in our opinion one of our fellows falls into error, we must not narrow-mindedly condemn him (or her) but must strive all the more to help him into a better path for the future.

We must not be surprised that in the sexual province in particular, the problem of self-control plays such a very prominent part. Contrary to the old Latin saying that most people need spurs and very few the bridle, in sexual matters the opposite is the case, most people need the bridle and very few the spurs.

Of course there are times when the Latin proverb applies to sexual matters. Doctors sometimes come across people with sluggish constitutions whom they would like to inspire with a little more sexual impulse, a little more energy, so as to keep the flame of life burning more brightly.

Thus when we speak in this section of sexual self-control, we mean first of all the bridle; but we must not forget that now and again the spurs may be needed to stimulate the sexual energy. Both may be of equal importance in making our lives a thing of beauty, and scientifically considered they are but the two sides of the same problem. Both are included when we define sexual self-control as the conscious mastery of this function.

This third part of our work possesses still further importance, for it deals with a question of the conduct of our lives. Nothing in the whole world is so hard to master as our sexual impulse; and when we have once obtained an insight into the means of governing it, then we have *a fortiori* discovered the right way to become the masters of ourselves.

31. The Control of the production of Semen.

When we speak of sexual self-control what is really meant? What must we control? First of all we must devote our attention to the material basis of our sexual life, i. e. to the new formation of the reproductive cells. But in order that all influences may be brought out as clearly as possible I shall begin by dealing with the male sexual life, and for the time being only speak of the production of the semen. The same applies in principle to the female organism as to the male, (as we have shown in extenso in Part II), only in woman it is less frequently apparent.

The essential constituent of the seminal fluid is the microscopic sperm-cells, harvest of an embryonic tumor, which we have already dealt with in Chapter 3. What laws and regulations govern the release of these cells from the period of puberty onwards, whether this function proceeds continuously and regularly of itself, or is associated with daily, monthly or yearly periods, or whether it is more or less influenced by our absorption of food or by voluptuous impressions dash we must withhold the answer to all these questions for the present.

But our attention has been drawn of recent years to the enormous importance of some organo-chemical substances which are at work in our blood stream; especially such of them as originate in the testes or ovaries. As has been experimentally proved, these substances are of decisive importance not only for the production of reproductive cells but also for the arousing of the sexual instinct and for the directing of the impulse, (see chapter 4.)

Normally this chemical factor remains so far quite beyond our influence.* Only in the most desperate pathological cases the question may arise whether it is not preferable, in persons with deep-seated hereditary taint, to deprive them of their capacity for reproduction by operative section of the sperm-ducts (vasectomy)** or egg-ducts (salpingectomy). Vice versa

* In the next chapter when dealing with secretory stimulants we shall refer to the effects of a meat diet, which is perhaps here partly responsible.

** After this the sperm cells can no longer be expelled, and the

many cases of defective sexuality which now receive no care or treatment might possibly be cured by operations for the transplanting of normal "glands", or similar procedures.

I mention this in respect of many cases of nervous depression, melancholy, mental deficiency and loss of vital energy. But one should be most cautious with such operative interventions, because the symptoms mentioned are frequently only the secondary indications of deeper mischief, that is to say Nature's healing method, to ensure the necessary rest.

Amongst ordinary pharmaceutical drugs there are some which have an effect on the sexual system. Quinine and salicylic preparations, and also alcohol in excessive doses*, not only weaken the sexual impulse, but appear also from their toxic effect on the protoplasm to be able to inhibit the production of healthy reproductive cells.

Here we have a warning that we should always be most cautious in the use of such powerful poisons, and if possible leave them alone altogether, so as not to undermine the vital energy.

Healthy reproductive cells are best guaranteed by all round health and strength, combined with a good heredity.

The other components of the semen, which form quantitatively by far the greater part of the contents of the seminal vesicles, such as mucus, epithelial cells, crystalline substances

production of the reproductive cells soon ceases; just as in the female organism the production of ova always stops as soon as an increased resistance in the tissue of the ovary prevents the escape of the ova. (See page 129). This occurs easily in virulent suppuration. After the section of the seminal duct the interstitial tissue of the testis is produced in far greater quantity, whereby, (at any rate at first) sexual desire and potency are increased (see page 30). In castration, i. e. the removal of both testes or both ovaries, on the contrary the production of these important organo-chemical substances would cease, and the physical and mental condition of the patient would become permanently defective.

* Chemotactically all unicellular organisms are repelled by alcohol, probably on account of its coagulating effect on their albumen. This is also fraught with consequences for the successful combination of the fecundating cells in conception; children conceived or begotten by drunken parents often prove defective in mind or body.

Very often the contrary seems to occur; because under the influence of stimulating quantities of alcohol many an unwanted child is bred.

and water, are all typical secretions of the mucous membrane which lines the vesicles and the other excretory passages; and it is also not improbable that the quantity of their production depends largely on the same causes that influence other mucous membranes. Just as all mucous secretions are perceptibly stimulated by such powerfully exciting substances as alcohol, hops, cantharides, (Spanish fly) spirits of turpentine, balsams and many essential oils and spices, it is not at all unlikely that the same drugs influence the production of these constituents of the seminal fluid to a marked degree, and increase it. We cannot be certain about this; but it is known that some of these drugs are very poisonous, and may cause cystitis, and even acute nephritis with hemorrhage from the kidney.

As we see, medical science stands abashed in these fundamental questions. The constituents and quantity of our urinary secretion has been laboriously studied for centuries; and these we can pretty well control, if we only pay strict attention to our diet and avoid irritating spices. And our intestinal functions can be regulated to the nicest degree by means of modern hygiene. But here, where the vital question of sexual production is concerned, we are still in complete ignorance.

If we desire to judge of the normal or abnormal production of semen, we should work out methods of chemical and microscopic examination such as are usual with the urine, and with the counting of the red and white corpuscles in the blood. A substance can only be properly and scientifically studied if it can be measured, counted and weighed.

If only one half of the time that has been wasted for centuries past in dissertations and theories had been spent in actual investigation of cause and effect, who knows what progress might already have been made towards voluntary control of this function, such as we have long since learned to exercise over so many other originally involuntary ones.

It is certain that we should have organized our food and dress more appropriately long ago; we should then no longer force our children at the critical time of puberty to remain sitting so many hours per day in positions which render their circulation stagnant, but we should see that they alternated their hours of study with suitable energetic muscular exercise.

The connection between sexual and social abuses would not then remain so long unheeded; we should zealously do our best to render it possible for every adult to realize an appropriate fulfilment of his sexual ideal; the sexual life would then become ennobled; love would be the highest virtue. But just as the astrologers have sought in vain to read the course of all earthly events from the starry skies, so men have always attempted to subdue the sexual from the spiritual side, instead of beginning from the material foundation.

And we might approach a little nearer to a solution of this problem, by enquiring a little more closely into premature and retarded sexual development in plants, animals and men. In chapter 40 dealing with sexual evolution, we shall refer to this more in detail.

32. *The control of our seminal secretion.*

In the previous chapter, in which we treated of the formation of the sexual *substance*, the result was an “*ignoramus*” (we do not know); and now that the question is whether we can govern the *secretion* of this substance, the state of things is much worse, for we must confess we cannot (“*non possumus*”).

The sexual urge, which can cause us such torture, is not called forth by the semen as such, this emulsion being of itself almost without influence, but from tension in the seminal vessels and ducts, which forces itself on our consciousness by the congestive manifestation which we term erection.

What do we expect to accomplish by self-control? No matter how loudly we may declare in our pride that we can control everything by our consciousness, our science, and our strength of will, the formation of semen goes on steadily, constantly increasing, and the seminal secretion will always be and remain a periodic function. Although the formation of semen is not a *conditio sine qua non* of our life, such as the secretion of urine for instance, — yet because its amount continually increases, its expulsion finally becomes as imperative as that of the urine, although its volume is far less.

Both these secretory functions go on whether we wish it or not; if not in our waking hours, then during our sleep; these substances are secreted. The question is then not “are you sexual or not sexual?”, but only “in what paths does your sexuality run?” The product of the sexual secretion surprises us, either sunken in dreams or in the intoxication of love; voluntarily called forth, or repressed as strongly as possible, it springs forth however much we should like to prevent it. We can school ourselves to avoid every kind of sexual activity, to abstain from masturbation or copulation, but it does not lie in our power to stop the secretion. Herein lies our “*non possumus*”.

As regards the urinary secretion we can always postpone the evacuation of the bladder for some little time by strong contractions of our voluntary external occlusory muscles; but if we try to do the same thing with our spermatic secretion

we should only increase the erection. Will power and mental superiority are powerless here.

So if it does not lie in our power to regulate the tension in our seminal vesicles and ducts at our pleasure, well and good, let us at least not voluntarily permitting tension and congestion to be increased by accidental influences; we should carefully avoid all such as produce this effect. If we are temperate and discreet in these matters we can really achieve much success. We will now endeavor in this chapter to discover what these accidental influences are.

Erections that give the alarm-signal, are a function of the external occlusory muscles, as we have explained in chapter 20. They can also be occasioned or aggravated by pressure from an over-full bladder or rectum. Above all we must avoid all tension in these related functions. And on this account we have already dealt with the control of the other two functions in such a detailed fashion in chapters 16 and 17. Although the subject may appear far from idealistic, if we can only thoroughly control the urinary and intestinal functions, we shall have fulfilled one of the most important conditions for a regular sexual life.

From our childhood even, before any sexual urge exists, we should be careful of the connection between urinary and intestinal tension and erections, and begin to practise self-control. And we should begin early to observe what other causes of erection there may be. Then as we reach puberty we shall not fall into the common error of regarding every erection as a call of nature to the exercise of our sexual function. For we know from our own experience how greatly many different kinds of excitants may contribute to it and lead us to despair.

And all *mechanical* factors also, which accidentally increase the internal pressure in the abdomen from time to time, will at the same time increase the tension in the seminal vessels and the venous stasis. Over-filling of the bladder and rectum act powerfully in this sense; and if both cavities are overfull at the same time, the seminal vesicles are compressed between the two distended organs. This must be regarded as of the greatest practical importance.

Similarly the pressure in the seminal vesicles is mechani-

cally increased by too hearty eating or drinking, especially at bedtime. And if we remain seated too long at a time, the abdomen is doubled up, especially if we bend forward; fatal symptoms of congestion and venous stasis may even occur.

I may also mention the wearing of tight clothes which is still the barbarous custom among females; the corset has been largely responsible for prolapsus uteri and excessive menstruation.*

On the other hand, congestion of the pelvic organs may be very effectively relieved by physical exercises and muscular exertion, especially if these be performed in the open air.

On the other hand monotonous mental strain may only too easily occasion congestion of the brain, especially of these centres which govern our sexual functions.

Besides these mechanical stimuli which cause increased pressure in the seminal vesicles and blood-vessels there are also *chemical* substances which, taken as spices, medicaments or poisons, excite spasmodic contractions in the seminal vesicles and ducts because through their chemical effect they stimulate or even inflame the mucous membranes involved**.

These substances are all known to the laity as aphrodisiacs. Every one who has ever suffered from catarrh of the bladder (see page 121) knows what it is to irritate the epithelial surfaces: in this condition the presence of even a few drops of urine in the bladder causes spasmodic pain, just as if the bladder was full to bursting. So, too, in conjunctivitis, the smallest moisture causes smarting and burning as if there were a grain of sand in the eye. In the same way the sexual mucous membranes will be extremely irritated by such chemical irritants, and the organs in question stimulated to the most intense contractions, even if they are almost empty.

* I remember the case of an elderly lady patient of mine, who frequently came to me to have her prolapse-pessary cleaned, until one fine day she happened to leave her corset off, with the result that the trouble suddenly disappeared. And how many women and girls there are who complain of menorrhagia and yet will not discontinue wearing corsets.

** See once more Chapter 5 where a parallel is drawn between the onset of puberty and an inflammation.

Important in this connection are those substances, which we have named on p. 103 as exciting the production of urine, and on page 121 as exciting its excretion, and which we have also considered as possible stimulants of the sperm-cells, or at least of the production of the other components of the seminal fluid. There is ample evidence of these drugs being able to excite us sexually, for they irritate the mucous membranes, increase antagonism and cause congestion. Meanwhile we may mention that the effect of these substances may vary greatly according to the dose, the combinations, the accessory circumstances and particularly the mental associations; there may also exist individual idiosyncrasies owing to which certain persons are peculiarly sensitive to one or another substance.

In order to discover these chemical influences and to judge them individually there is nothing better than the degree of erection produced. This blood pressure manometer is extremely sensitive. Every adult can thus ascertain* for himself what drugs or spices, foods or drinks stimulate his sexual feelings, and then he can accordingly employ or avoid them as he desires.

The effect of alcohol and of all alcoholic dishes, sweets and perfumes on the sexual feelings is most complicated. The elevating effect of small quantities always produces the impression of raising a man's spirits; but even at this stage a diminution of inhibition and coordination is evident, which is very dangerous.

And it is specially the finer ethical motives of self control which are swamped by even small doses of alcohol. Let us imagine a polite gathering of relatives or friends. Everybody of course, would be careful to avoid all sexual improprieties, especially if unmarried persons were present, for whom sexual abstinence is already sufficiently troublesome.

But as soon as they all get a little elevated from the effects of a little alcohol, and one of them makes a rather daring joke, they all follow suit, because each individual criticism is paralyzed by the alcohol. The best proof is the following: if in such a party there is only one abstainer, who will not join in even

* In the female organism we find the same erectibility in the spongy tissue of the clitoris, with its congestive phenomena, but here the whole apparatus is on a smaller and finer scale (like a lady's watch).

"par complaisance", the one aim and object of all the others is to drag him into it, so that he shall not continue to be a "spoil sport". Later if they have drunk a great deal more alcohol they will present a much less tempting picture, and finally throw off all reserve.

And yet alcoholic beverages are almost always served on occasions when a maximum power of resistance is vital. Most young people who have gone to ruin for sexual reasons, have failed through this combination of sexual excitement with the loss of their powers of resistance through indulgence in alcohol.

We must now devote a few words to the use of meat as food, as the flesh of animals may in various ways act as a sexual stimulant. Firstly, the extractive matter of the meat acts as a stimulant to the nervous system, and in particular stimulates the heart causing a quickened pulse and increased blood-pressure. For that reason we drink a cup of beef-tea before a meal, or a strong meat soup at dinner. This effect agrees exactly with what we mentioned in chapter 4 about the organo-chemical substances; and we know quite well how greatly the sexual life may be stimulated by the latter. Secondly, this extractive matter keeps us awake, like tea, coffee or chocolate, which only heightens the misery of loneliness at night. Thirdly it has been empirically established that meat, and soups and dishes prepared from it, have a constipating effect, and we have already seen in what way this affects continence*. Fourthly the intimate psychic connection between carnivorous cruelty and sexual recklessness can be fatal to higher ethics; and as the saying goes: animal food makes beasts of us.

In the question of meat diet we not only have to take into consideration the extractives of muscle fibres; but in adult animals the organo-chemical metabolic products of the thyroid glands, testes, ovaries etc. are carried into the circulation, a most important category of secretions which exert an extremely powerful effect on our whole sexual system.**

* We can readily convince ourselves by experiment that even if we compensate the constipating effect by laxatives, the stimulating effect on the nervous system remains. So the latter is not entirely dependent on the constipating effect.

** In regard to these products, hormones, endocrine substances, etc., see *Dr A. Weil's* recent book, "Die Innere Sekretion", Julius Springer, Berlin.

If later it is found that these metabolic products are allied to toxins, the parallel drawn in Chap. 5 will be still more illuminating. It would be of interest to enquire whether the effect of the meat differs if it comes from a male or from a female animal. In this connection there may be a deeper reason than we suspected for doctors ordering veal for certain patients rather than beef.

The current belief that the eating of eggs specifically increases sexuality, seems to me to be only symbolical. Their great nutritious value would of course have some effect; but as far as I am aware, there have been no scientific researches to support this opinion.

One thing is certain, and that is that the ordinary diet of many unmarried people and of travellers is the least calculated to encourage sexual purity. Wine or beer at table, together with meat and hot condiments; after the meal stimulating coffee and a good cigar or cigarette, perhaps containing opium... can we be surprised if after a stimulating evening's enjoyment, the brothel seems to be the only remedy indicated?

The principal point in every scheme of diet is moderation, and at the same time a certain regularity, by means of which, in the course of time at least, a certain amount of immunity may be acquired against such damaging influences as cannot be entirely avoided. And if one has accidentally absorbed a too highly spiced or irritating dish, the evil effect can always be diminished by drinking a lot of water after it, or by taking a weak solution of Epsom salts*, which cools the blood, and acts as a slight laxative.

Do we possess in contrast to the aphrodisiacs, drugs or food substances which have a calming or depressing action on the sexual system? We certainly do, (See page 195) such as some salicylic and quinine preparations, bromide of potassium which is very lowering, etc. Chronic nicotine poisoning from

* The following makes a very good mild aperient water: Epsom salts 1 oz, Glauber salts $\frac{1}{2}$ oz, water one pint. A little may be taken several times a day, or at bedtime only; but only just enough to act as a gentle aperient. As it has a marked action on the secretion of saliva, it quenches thirst and cleanses the mouth. As it also causes an increased proportion of water in the bowel-content, any exciting substance unwisely taken would also be diluted.

excessive smoking may also end in impotence; but all these remedies not only depress the sexual system, but the entire vital energy suffers from their use, so that the remedy is worse than that disease. And it is still questionable if extract of the pineal gland, which has been prescribed in cases of satyriasis and nymphomania, does not produce undesirable effects in other directions.

But the occasional use of volatile substances such as camphor and validol seems to be free from objection.

Besides the mechanical increase in pressure and the stimulating drugs, there is an important category of exciting causes whereby sexual congestion to an unlimited extent may be voluntarily called forth, viz: all local skin-stimuli. Thermal and mechanical skin-stimuli are most powerful in producing congestive symptoms; their effect is prompt and sure. Nowhere is the causal nexus so clear. Through warmth and an alternation of pressure and non-pressure a congestion can be created at any part of the skin-surface; but most easily of course in the sexual organs which are so easily congestible, and are so little accustomed to change of temperature and mechanical stimulation.

What powerful congestion of the skin is produced by a hot bath, or by the reaction after a cold one, and locally through rubbing and scratching! For this reason it is always advisable to practice cold water treatment and rubbings in the morning, and never in the evening just before going to bed. Warm clothing, overheated rooms and too hot bed-clothes of a night greatly increase the sexual irritability, and for this reason rich people and town-dwellers are often more excited sexually than country folks who suffer much privation and exposure to the weather.

How very effective mechanical stimulation of the skin may be in this respect, is best illustrated by the birching of naughty boys at school in the old days, which nearly always caused strong erection. In certain so-called massage establishments similar treatment is extended to elderly impotent men for the same purpose.

In general the frequency and intensity of our erections depend more on accidental skin irritation than on an actual overfilling of the seminal vesicles. The most trifling causes may often produce the most powerful erections, even when the seminal vesicles have only been emptied a few moments

before. This sensitiveness to thermal and mechanical stimuli rivals the sensitiveness of our finest physical instruments.

But all this is far surpassed by the sensitiveness of our nervous system. Let us consider how the sexual system reacts to nerve-excitement. We have explained at length in chapter 20 how intimately the sexual muscle contractions and sexual congestion are functionally associated with the central nervous system and also with the brain.

These mutual influences are however so extremely sensitive that in the majority of cases we really do not notice the connection between cause and effect, and so we are not conscious of its existence. So anyone thinking of erection would surely suppose that the seminal vesicles were terribly full, whereas perhaps only a remote association of ideas has occurred. And vice versa, anyone thinking exclusively of the psychic emotions would imagine that the sexual impulse was only a psychic one. The latter go so far that they regard the bodily sexual function as a desecration, a coarse materialisation of love. If however we attempt thus to separate the love-life from its material basis, a just judgment of the causes and effects becomes simply impossible; and thereby all rational self-control disappear.

It is a well known natural law that the mental image of a physiological function may produce to some extent the same effect as the function itself, only in a lesser degree, e. g. if a dog sees a piece of meat, his mouth begins to water just as if he already had the bit of meat in his jaws. So the most powerful erections may be caused by the sight of any sexual act, or even by merely thinking of such. The Roman catholic clergy, rendered hyper-sensitive through sexual abstinence, believe it is not possible to see any part of the body naked without thereby being sexually excited.

There appears to be a wide field for self-control in the psychological sphere, if we notice particularly which associations and suggestions are specially fraught with fateful consequences for each of us. Loneliness and darkness are specially dangerous for one person, while another is excited most by brilliant light, heat and a crowd of people.

Exciting causes which we cannot abolish, may sometimes be diverted into other directions. Just as thermal and mechanical stimuli of the genital organs may be diverted by similar counter stimuli of distant parts of the body, so psychic sexual stimuli may be diverted by giving one's psychic interest to other subjects. Music and agreeable conversation with people of strict morals, but sociable and kind, are among the best remedies for keeping us from excessive sexuality. Also memories of our childhood, when we were not yet sexual, and the encouragement of higher ideals, are very helpful as counter-excitants. Useful work and efforts carried out amongst sympathetic people, especially if these aim at the well being of others, have a still more powerful effect.

In concluding this chapter I would like to mention a stimulant with which I really ought to have begun, because it is a prototype of what is physiologically called a stimulant, and that is the sting of an insect, as this gives rise to intense local itching.

From the flowers it is now generally known what an important part insects play in fertilisation. But the parasites of the human skin play an equally important part. With our asexual or antisexual training what would become of our sexuality, if we did not learn from our earliest youth, especially through occasional insect-bites, to relieve local irritation by rubbing, and if did not notice as we grow older that certain portions of the body are particularly sensitive to this sort of massage, and that the genitalia are specially differentiated for this purpose? The proper development of these specially appropriate organs depends on this practice. For I have often found, that persons specially sensitive to insect stings or bites, are sexually most sensitive, and vice versa.

There is however a great danger attached to this practice. Massage is a useful corrective in all ordinary, slight and uncomplicated irritations of the skin, as by every involuntary movement we bring this massage to bear all day long with instant good effect; but if after an insect sting, the sting itself or a trace of formic acid is left in our skin, then in a case thus complicated every movement only increases the irritation and

renders it unbearable. So the first timid movements of a child may prove a useful schooling for self-consciousness; but so soon as the sexual urge becomes too powerful in us and remains unsatisfied, even in childhood, these irritating movements become a passionate habit, and it is then true that with every voluntary movement the state of things becomes less bearable.

33. The increase of our power of resistance.

We have just discussed in the last chapter what influences we should avoid, in order that our sexuality should not be needlessly excited. But it is not always possible to avoid every source of excitement, the normal sexual life itself still remains as the fundamental exciting cause that cannot be avoided.

No evasions are any good here, we must seek our strength in ourselves. When the time comes we must be inflexible, not to yield. We must arm ourselves with an increased power of resistance. Just as we must be able to defy heat and cold, we must be able to resist the sexual excitant by our own strength.

And we can accomplish much in this respect by a strict and natural mode of life, by roughing it and training, by energetic occupation, sport and cold water, by plenty of muscular exercise (best of all in the open air), long country tramps or cycle rides, preferably with companions of both sexes. Our life should be well filled, full of change and interest, as energetic as possible, then this one kind of excitant would not master us entirely, for there would be a good counterpoise for it. The higher we fix our life's aims, the more inflexible we shall be.

Still, even when we are armed to the teeth, it always remains a hard struggle. As this excellent mode of life improves our health enormously, it ensures at the same time a normal, i. e. a strong sexual urge. And then if one tries, as in cases I have seen, to avoid this last danger by diminishing one's food, by self denial and asceticism until one is thin and pale and wasted away, unfortunately one finds that this does not attain the desired result. The sexual impulse may be kept within certain bounds for a while, but it is the last of all impulses to die within us. And before one has been brought so low, all one's higher powers of resistance will long have been exhausted. It is of the greatest importance that we should be aware of the extent of our power in this respect, so that we may save ourselves from endless disappointments, tortures of conscience, and despair.

Even if we seek only a moderate degree of success in

this struggle, our power of resistance must be encouraged and exercised from our earliest years. The system in vogue in many families "to give way to children as far as possible" leads in maturer years to the principle "we should yield as much as possible to sexuality". This is a reaction against the principle which was formerly too frequently acted on "give way to children, and to sexuality, as little as possible." Both extremes are highly fatal.

We must learn from the beginning to control our reflexes by simple and regular rules of living. First of all our secretory reflexes. That is the second, the educational reason for my having gone at such length into the the question of the control of the two other secretory functions. This is indeed the most rational and natural method to teach the child from the beginning regularity, diligence and forethought in all his behaviour, as though it were second nature.

Little children often find it hard to properly govern their urinary secretion, later one can never finish learning the control of one's intestinal function; then finally one moves up into a higher class, in which the same system of self-control must be extended to the sexual province; always noticing attentively the connection between cause and effect in order to become master of the situation in this respect also.

The more we can govern this sexual world as we grow up, the more do broader perspectives open out before us, and quite other ideals than only the control of a physiological function. For only then do we fully realize how greatly all our life's happiness depends upon it. It is no longer sufficient for us to increase our power of resistance so that we shall not fall in the fight, for this after all, is only the negative aspect of the problem, but it is indispensable to direct our sexual life into the proper paths, so that it may become more beautiful. Every increase of blood-pressure should spur us on to better endeavors.

We have seen in chapter 21 that erection is an impulse to procreation, and in chapter 29 why we should not seek solitary satisfaction. It is the manly erection that wakes us from our childish slumber, so that we may seek a full sexual life. Henceforth all our energies must be strained to this

end, and not only to the avoidance of evil. We want to fight for a good position in the world, so that one day we may found a family in a warm little nest of our own. And we hope, long before that, to fall in love and become engaged, charmed by the prospect of this great happiness.

And now all the spectres of the psychic and vaso-motor exciting causes which have so long tortured us and robbed us of our sleep, fade away of themselves. Now we feel these exciting causes as a foretaste of the subsequent fulfilment of our ideals. All these influences which we have so greatly feared are now metamorphosed into useful motives, as stimulants to our energy, to help us to reach our great aim. Empty wit and stupid jokes, everything which ridicules what now is sexually sacred to us, we find simply unbearable. They wound our ideals. Questionable books and plays and pictures all disgust us, bore us, for we have something better in mind. We no longer avoid friendly relations with the opposite sex, but prefer it, and always as respectable as possible, because that harmonizes with our beautiful ideal. To approach our new ideal is our highest aim; no effort is too great for us to make, and we have now no time for sexual dreaming; the sexual reality is beckoning us forward. And if unfortunately our lot is not such a happy one and there is no prospect before us of the fulfilment of our ideal, that should not hinder us; on the contrary, every sexual impulse and every sexual congestion should be a warning to us not to rest until all the many obstacles in our modern society against a pure and happy sexual life have been cleared away. Why should so many persons be condemned to wither all their lives, without ever having blossomed? We should all strive for a better organization, and especially for a better sexual organization.

In conclusion I would like to resume what I have said. Just as in fighting infectious diseases, safety in the sexual province has been sought hygienically and educationally in isolation. That was in the middle ages with its morbid and exaggerated asceticism. In our new era, however, we prefer to try immunisation. Spiritually we shall best succeed in this if we not only fight against our lower instincts, but above all strive for our high ideals.

34. *The control of our free will.*

So we have enquired into the practical means of controlling our sexual passions. Now if we only carry out that good advice . . . yes, *if* we behave accordingly, but here we are confronted by a great difficulty. Just in those very moments when a sexual stimulus occurs, we *want* to be thus excited, and at the very instant when we ought to avoid this excitation, we do not wish to avoid it.

Nowhere is our unwillingness so great as in sexual self-control. Here we are only too glad to allow ourselves to drift. And if we have once given way, and especially if we have often given way, then it soon becomes so habitual that we no longer wish to do otherwise, and we no longer think of what we are doing. That which we did at first more or less consciously, in the course of time we do unconsciously, more and more automatically.

Thus it is with married people in marital intercourse, with youths in masturbation and with old bachelors in prostitution. If we once become the slave of passion, what can be done? And especially in a sphere that is already so full of animal impulse. Of course St Anthony might as well have preached to the fishes, for they, at any rate, are cold-blooded.

Yes, if we wait without energy, idly until the last moment, then good advice would come too late — it would always be too late. But if we are in earnest we can begin taking precautionary measures today, whereby our will can be rightly directed for to-morrow and for our whole future. We must begin with prevention, before the temptation has got hold of us. Everything depends upon our directing our own free will in the right path, in anticipation.

In our psychic sphere also, we can employ the same method which we have seen to be so effective in the control of the material functions. We can seek out cause and effect in order to intervene early before evil influences have become too strong for us, nay, before they have made themselves manifest at all, for the law of causality also exists in the psychic sphere. Only the expressions of our will seem here to be an exception. Happily this is not so. If our will were

free in the sense that we could without cause act justly one moment and irresponsibly the next, be upright one moment, and rascally the next, then all continuity of the moral life would disappear; all training, practice and self control would be useless; our conception of morality would be all a matter of chance, a mockery of all ethics. But this is in direct contradiction of our experience. We see how one man always makes his decision in a crisis in an orderly, self-conscious and deliberate manner, while other people always allow themselves to be led to foolish deeds by momentary impulses.

There is no such thing as an expression of our will without cause, but we are not in the habit of paying much attention to the motives for our will. Even the most insignificant unconscious acts have an adequate cause. Why is it that when we have lain on our right side in bed for a while, we turn round and lie on our left side? This decision of the will is actuated by the fact that any position becomes uncomfortable if maintained too long. All our lives long we cannot endure a perpetual rest-point or point of support, any more than a drop of water can remain still on a red-hot plate. We are only absolutely at rest when we are dead. The whole series of manifestations of our will when, in the morning we get up, wash, dress, breakfast and go to our work, every movement has its cause, only in the course of time through custom it has become automatic. The causality has still remained the same, only we gradually come to recognize it less or not at all.

Only in difficult cases does it cease to act, that is to say, when the motives for and against are equally strong. And then it enters our consciousness, that now our own intellectual motives must decide. We think it over, we weigh the various motives until at last the balance sinks on one side because it is overcharged. Then we speak about our free will, because the decision of our will is not now actuated by external influences, as it so often is, but only inner motives and inclinations influence the decision, of which we ourselves could at first say nothing, as to how the balance would finally be decided.

To make my meaning clearer I will quote as a concrete example an every day occurrence, not taken from the sexual life, but from one just as impulsive, alcoholic intoxication. In the police court news appears the following: "During a

quarrel in a restaurant X... fractured his friend's skull with the leg of a chair... Homicide, with extenuating circumstances... two years' hard labour."

On that fatal Saturday night, when the guilty man was overcome by drink, he was no longer responsible; but the previous afternoon his will was perfectly free and open to reason. He was a most respectable man, all his companions liked him whether they met in the tavern or out in the country. He said to himself: "I have worked too hard all the week, (first mistake) it was really too bad; but now I have done good business and want to have a bit of fun, (second mistake). Now the weather is so fine I might take a brisk walk out in the country with some of my friends, that would be the best recreation. No sooner said than done. But as he was going along the street his friend and tavern companion, the one whom he struck down later, met him. He was quite sober and jolly and called to him from a distance: "Gods truth, old chap, is that you? you look so tired out, come along and let's drink a pint together. All the other fellows are coming tonight too, we shall have a fine time, that's the best way to pull yourself together." In reality the good man was a *little* annoyed at the unexpected meeting, which upset his plans for a quiet day in the country and would much rather have said "No", because it was such a fine day for a walk. Before he had pulled himself together, (third mistake), and because being so tired he did not feel in a mood to resist, he said: "Oh, all right, I can go for a walk any time," and went along with his friend. — The first thought that in order to enjoy himself he must do something foolish was more powerful than the hygienic idea of going for a walk, and so it won the day.

Principiis obsta! Be careful at the beginning. Many things which are recommended in this book may represent for the author and for the reader the little stimulus which exerts a deciding influence at the right moment, when one is first tempted to fall from pure speech and thoughts to the less pure; but has no effect when one has become too fascinated.

The question now arises, what will lead us to choose wisely at the critical moment? What motives ultimately influence our will in deciding? When we have once found that

out, then we can begin to employ these valuable motives for our future actions.

In order empirically to discover the prime motive that governs all living creatures, we must go back to the history of evolution.

It is one of the most remarkable facts in the organic world, that all living creatures aim at self-preservation; they shun injury and seek what does them good. We find this principle in the lowest order of all unicellular organisms, as far as they are capable of changing their position; that is to say even in such creatures as have neither nerve-system nor consciousness, but in which the entire cell consists of a drop of semi-fluid albumen. We know that albumen contracts under detrimental influences such as heat, frost, metallic poisons, alcohol, electricity, dessication, concentrated fluids etc., and if such a living cell of albumen contracts on one side, the danger side, and remains fluid on the side remote from the danger, then it changes its position, moving away from the noxious influence and towards the favorable one.

On a somewhat higher stage in the scale of evolution the same object is better attained by the vibrating movements of the cilia or other similar microscopic processes of the albumen, specially differentiated for the purpose, and which act like the oars of a boat. Because these contract much more actively on the side nearest to the unfavorable influence the tiny organism, just like a rowing boat, will turn its stern to the danger, and if it has stored up energy from the food stuffs absorbed, will rapidly flee from danger. The smooth muscle-fibres in insects and the striped muscle-fibres in the higher animals are still more finely differentiated; these fibres are indeed particles of albumen even more highly differentiated into organs of locomotion. We are endowed with an organization which allows us still more accurately to avoid everything injurious and to seek everything favorable. The sense-organs are like so many outposts, and are in telephonic communication with the muscles, through the medium of the nerve-fibres. The central nervous system acts as the switch-board.

The sensitiveness of our nerve-cells, especially those which lie in protected clusters in the central nervous system, is so great, that they not only react to a danger which threatens

life, but to the finer shades of pleasure and pain; they are even so sensitive that not only the pleasure or pain of the moment, but even the memory of previously experienced pleasure or pain influences our every decision, so that in the latter case, we can avoid it in future.

If then we enquire what are the motives that generally decide our choice, we see that in general the instinct of self-preservation stands first. This is the life-sustaining principle of all cell-life, and our most powerful weapon in the struggle for existence.

And with this also must be associated the instinct of the protection of those persons who are the most nearly related to us, who so to speak form part of our existence; which is often, though inappropriately, called the instinct for the preservation of the race. We wish to live happily in common with them.

We generally find this instinct of self-preservation united with this altruistic feeling of solidarity, more highly developed, the higher we ascend in the series of animal species. The highest development of all we find in mankind, inasmuch as we have accustomed ourselves to trace out consciously the chain of causes and effects. Only thus are we able to judge after full consideration what is good or evil for us and ours in any particular case, whereby conscious self control will be the soonest assured.

Yet it would be difficult for us to make the thousand and one daily decisions which are necessary, if we had to stop to think each time, of everything we must weigh the balance. So we only do this in the most serious decisions. Generally we decide very quickly, and choose more intuitively, or, if you prefer it, instinctively, that which appears the more favourable. It is evident that one can deliberately acquire the habit of never deciding too rashly. And all our higher education should have as its object the broadening of our views and our sense of the higher pleasures and aims of life, so that we may make the right decision in any particular case, without too lengthy a consideration or hesitation.

However there is another category of influences of the highest importance, based on the very essence of our mental

organization and all the harder to control because they are outside our consciousness. When we find ourselves in a dilemma, the question is not merely which solution is the better for us and ours, but also which is the easier one. The decision which comes easiest to us, always possesses, without our being aware of it, a great advantage.

The more often in our psychic life a certain course of action has been followed by a good result, the more rapidly and comfortably will the same path be followed in the future; the following of this path then becomes a habit, a routine, something in the same way as a foot path when worn smooth is more readily followed. The resistance in our brain seems to diminish. So in the course of time we can acquire a certain virtuosity in making swift decisions, and the making of a wise choice becomes second nature with us, just as though it was an ordinary reflex. One need only think of the rapid fingering of an expert pianist, and of learning by heart, both of which are only attained by endless repetition.

If we once thoroughly study this unconscious influence, we can also turn it to our own use. For we know what a powerful factor the force of habit is with us, and how enormously important it is to accustom ourselves from childhood to good habits and correct principles. This more than anything else, gives us a future assurance of proper decisions, even if we find ourselves confronted by a difficult dilemma.

Closely related to this preference for that which we have already often done, is the preference for that which we have preserved in our memory not indeed as an accomplished act, but as a mental image. We have already seen, on page 185 that a mental image is only a degree inferior in its effect to the reality. Hence the great importance of good plans and intentions. The making of these good plans has in and for itself perhaps no great value, but it may be the first step towards realisation. Good intentions will be especially effective, if they do not simply affect details, but the whole of one's mode of life. That is the strength of the ideal. Then an entirely new perspective of heightened joy is opened to us, which makes us feel happy in anticipation.

Similarly related to this preference which we feel for what we have already done, is the preference for what we see or

hear others do around us; for in this case also we have only to work on an image that we have before us, which is always easier for us than creating an entirely new one. This is the force of suggestion through our environment, and in the case of our co-religionists or fellow members in a party, we call it mass-suggestion. Even the thought of a faithful friend, of our mother, our betrothed, or our children may restrain us from many an act, at the last moment.

Here however, we must make a certain reservation. Of course, when persons who are sympathetic to us are concerned, we willingly decide in agreement with them; but if on the other hand, the people are unsympathetic to us, then we are predisposed from the first to do exactly the opposite to that which we observe in them. These sympathies and antipathies play a most important part in the sexual life. We are always anxious to attach a particularly sympathetic person to ourselves; we are always happy to do whatever will please him; especially if it should bring us both future happiness.

If we know beforehand, how much not only our own present future happiness, but also that of dear ones, depends on correct decisions, we shall certainly make up our minds to take up such a strong moral position, firstly through good habits, secondly through high ideals, and thirdly by cultivating a circle of good friends and sympathetic acquaintances, that nothing can shake us from it.

And the more perfectly we develop all these motives, the more perfectly we shall be able even in the most difficult cases to escape from evil and embrace the good, instead of, blinded by the excitement of the moment, flying into danger like a moth into the candle-flame.

35. Suggestion and Hypnosis.

The most essential condition for the control of the sexual impulse is that at the critical moment one shall be in a position to display sufficient strenght of will. But the majority of the methods of self control which we have discussed up to the present can only be effectual if the danger could be foreseen, and if one has armed oneself against it beforehand. Only too often, however, we find ourselves suddenly placed in great danger which we did not expect and against which we could not be at all on our guard. Are we then hopelessly lost? No, for there is a method which is far too little known and studied, and which can work wonders in such urgent cases. I trust I may succeed in making this clear to the reader.

If we wish to develop great strength in any of our skeletal muscles, we immobilise our skeleton as energetically as possible, by means of some other muscle-groups, in order to have firm points of support; whereas all the remaining muscle-groups, which are momentarily not required, are placed at rest and as far as possible relaxed, so that we may expend all our energy on the muscles that are called into activity. How calmly a practised cyclist or skater glides along to his goal; a maximum result with a minimum of expended energy, and the direct opposite of what a boy does when learning, who uselessly strains all his muscles in convulsive effort and gives himself a lot of trouble in vain.

So also anyone who is psychically inexperienced mixes up all his ideas in his head at once; while he who is methodical knows how to concentrate all his thoughts on one single point while he lets all other portions of his brain rest. This is the principle employed by the hypnotist. It is his task to produce hypnosis in his patient. He puts him to sleep as deeply as possible, leaving one part of the brain accessible to himself, so that through this path he may entirely control the patient by suggestion; the patient no longer has any control over himself or any power of resistance, because all other parts of the brain have been put to sleep.

In the same way each of us can learn so to control his psychic life that whenever necessary he can concentrate all his energies on one point, while he allows all his other mental activities to rest and excludes them as much as possible. A man skilled in this art can really display wonderful will-power. I would like to explain the method of training through which this result may be attained.

Whoever wants entirely to control his psychic life, should first of all get into the habit of controlling his usual sleep, in order to be able to set all the different parts of his brain at rest at once. Then comes the problem of forcing everything to rest except the one point in question.

How can we put ourselves to sleep? How can we at any given moment stop all the functions of our brain? How does the hypnotizer proceed? First of all he lets the patient seat himself quietly and comfortably in a convenient arm-chair. He then proceeds to lull the patient's hearing through some monotonous sound, such for instance as the quiet humming of an induction coil, or speaking continuously more and more softly. At the same time he fatigues the patient's eyes for instance, by holding before them a small bright object, which he gradually, extremely slowly and imperceptibly brings nearer, so as to cause a convergence of the eyes, like in sleep. If this systematic rest-treatment only lasts long enough, and there is no interruption, even on the first occasion a sleepy feeling, if not actual sleep will be produced. The next day at the same hour in the same arm-chair things will go more easily, and finally the patient goes to sleep immediately, as soon as he takes his seat. The quiet conversation serves only for the hypnotizer to maintain contact with some point of the patient's brain, and thence to suggest to him what he wishes.

Anybody who has once learnt this secret can induce sleep just as well without the hypnotizer if he only has the strenght and patience to exercise it.

If one wishes to hypnotize oneself one should lie in such an easy and relaxed manner that every part of the skeleton is supported, as if the body were a bag of disjointed bones; for then one need not turn about any more before sleep comes. In the same way the supple body of the cat adapts itself to

the shape of the basket in which it lies, whether it be square or round, when it wants to sleep.

Then one should let all the muscles relax, as if one were dead, and the breathing should be regular, slow and deep as in sleep, and the pulse will soon follow suit, for normally these two functions always work in unison. Of course the senses should be cut off as far as possible from influences from the outer world, and one should choose the simplest forms of thought, preferably a few playful thoughts which are repeated over and over again.

Besides this there are all sorts of little tricks, nice and otherwise. Closing the eyes and making them converge as though we wanted to look at the tip of the nose may help considerably; one feels sleep coming over one. Of course such exciting beverages as tea, coffee or chocolate should have been avoided recently, for their effects are sometimes felt for the whole day. And if one intends taking a nap directly after dinner one can take a little alcohol before eating, in order to take advantage of its secondary effect, which one counteracts usually by drinking a cup of black coffee after the meal; but one must not cultivate this habit lest the whole mental life should finally fall under the influence of alcohol-hypnosis. Even sexual fancies and excitants may also help to divert the blood-pressure from the brain; for sleep is an anaemic condition of the brain. One may also take a few very deep breaths, so as to utilize the following longer pause in breathing, or one may so cut off the supply of pure air by covering the head with the bedclothes as to experience the commencement of carbonic acid poisoning. But as soon as one got a little into the habit of going to sleep in this way, one should drop these injurious practices.

I remember that in my practice I had trained myself so that whenever I had a free half hour I could say with certainty: "now I am going to sleep for half an hour"; or if I was expecting to attend a confinement the following night could get some sleep beforehand. And all this is only child's play in comparison with what some people have accomplished: the fakirs in India for instance, who have carried this so far that they can simulate death itself in their induced sleep.

And now we come to partial sleep, that hypnosis which is connected with suggestion, in this case autohypnosis together with autosuggestion.

Reader, have you never stopped to think why it is that a quarter of an hour in a street car may seem far more tiresome to you than a whole night in an express train? It depends on what we have already discussed. As soon as one gets into a night express, one settles if possible in a corner, and a sort of hypnosis occurs at once. One pays no attention to time and place, and often starts up astonished from dreaming, when one has almost reached ones destination.

Another example: a half hour's walk through the town is too far, one takes a car. But if one is on a holiday tour abroad, six hours' walking per day is not too much. Why is this? As soon as one sets out on a long excursion one adopts a regular rhythmic step; one picks no flowers and collects no stones from the wayside. Good walkers keep silence. They look straight ahead and think only of their goal. Perhaps they hum a melody which is constantly repeated* and in a short time they have fallen into a hypnotic condition; indeed on forced military marches it often happens that some of the men fall asleep while continuing to march. The few muscle-groups which are indispensable for the march continue to work automatically, all the other groups of muscles rest, our brain is at rest, we feel no hunger, thirst, cold or fatigue. And with what a fright we awaken from our lethargy if a friend cries: "Hallo! are you there?" We should not be more frightened if we suddenly ran into a wall.

The story is told of the theologian TROMMIUS, that while he was busy in his study on the *Concordance* that he was making of all the words in the Bible, the servant ran in and called him, saying: "Your reverence, your wife is very ill!" — "Good, I am coming." Then she came later: "Your reverence, your wife is in a terrible state!" "Alright, I am coming at once!" At last the maid come and announced: "Your reverence, your wife is dead!" "Oh indeed, then I can finish this word I am on just now." The good old clergyman did not mean to be

* The last note of each verse and the first note of the next are almost always the same; hence the easy repetition of the melody.

unkind, but was so absorbed in his work, that nothing of the exterior world, not even his wife, existed for him.

PROFESSOR VON NIPPOLD, the learned author of the "*History of the foundation of the church*", in the course of his walk, came one day to the parade ground, which he began to cross without noticing that there was a parade on. He did not hear the threatening cries of the sentinels until he was in the midst of the troops. From respect for the old man they parted their ranks and let him through.

In like manner, and oblivious to all, with only one idea in his mind, many a soldier braves the hottest fire, and a rescuer heeds no danger in fire or shipwreck. So died the heretics at the stake, singing psalms.

And so also in the face of sexual temptation. Affective mental images are crowded out by more affective ones, motives of prudence smothered by sophisms. But whoever can then steel himself against the temptation, by excluding every other idea and concentrating all his energy on the thought "I will not", can perform miracles, he cannot be moved.

"He who conquers himself is greater than he who taketh a city."

36. *Sexual Dreams.*

It is a pity that all these measures of self-control should be entirely ineffectual at night, in the realm of dreams, where the sexual obtrudes itself more than at other times. And yet our sleep occupies about a third of our whole existence.

Oh, how these dreams can excite us and torment us! They leave us no rest, and lead us during sleep to the most riotous phantasies, to extremes of exaggeration. In our dreams we are already gay and experienced Don Juans, before we have ever really slipped from the path of virtue, and we do the most stupid things in the sexual province before we have really performed even the most reasonable acts; phantasies that are felt so deeply and vividly that when we awake we are still quite under their influence, carious, crazy ideas, in short a school of the devil.

But it is nothing of the sort! First of all it is not the dreams which excite us sexually of a night, but on the contrary our sexuality which finds its expression in our dreams. Dreams are therefore a school for self-knowledge. Through them alone can we trace the violent congestive phenomena which stir us inwardly during the night.

These congestive phenomena have a certain periodicity. Every morning when we begin our work the blood pressure rises in the organs involved, whether it be the muscles or the brain. At dinner-time the venous congestion is localised a little lower down in the body, that is to say, in the stomach and intestines for digestion. And during the night still a little lower, in the lower portion of the spinal column and in our sexual organs; and these latter may also suffer from a local stimulus such as a too warm bed, a flea, or a desire to urinate, etc.

Thus our dreams are dependent on fixed laws and subject to the chain of cause and effect. The more we study these laws, the more the whole magic play of the dream-life is revealed to us as an unveiled mystery, most instructive as a mighty adjuvant to self-control.

But we must now go a little more deeply into the subject, for it concerns the most delicate secrets of our psychic life.

We have accustomed ourselves, with well pretended self-conceit, too much to thinking that consciousness rules in us. But nothing is more erroneous. Consciousness does not include one-tenth of our life, not one thousandth or one ten-thousandth part of it! Just think! All of these millions of microscopic cells that constitute our body, have their own life-history, their daily adventures and surprises, their metabolism, oxidation and secretion; and no trace of this penetrates to our consciousness. At the most we become indirectly aware of it when it is shown chemically or microscopically by science.

We can only observe what lies within the grasp of our sense-organs; but because these organs are transferred to the periphery of our body as end-organs of our sensory nerves, we feel everything that takes place within our body only obscurely and indefinitely. "Cogito, ergo sum" — I think, and hence conclude that I exist. Yes, but that is a poor consolation. Let us rather say: impressions reach our central nervous system, whose energy further converts these impressions into thoughts and sensations, which can only lay claim to a certain unity, because our whole body has grown together as a unit. This complex, this individual consciousness only enters into activity perceptibly or disturbingly if the whole or some very prominent details are concerned. All else crosses our mind with the greatest rapidity, and we are scarcely aware of it. The subconscious life is the normal, usual life; consciousness is only an exceptional condition.

It is therefore quite a hopeless task to attempt, in the study of the psychic workings of our brain, to observe its diurnal activity in full swing. One might just as well hope to teach a child what weaving is, by letting him simply peep in at the door of a great workroom where the whirl of countless-ooms makes him giddy. But when the looms are stopped, perhaps the foreman will be kind enough to show us a little handloom which is scarcely ever used in the daytime, and to set it gently in motion; first he takes a woof and attaches all the thread and then the woof from the other side. Then we begin to understand a little about it; and if we think of the same process infinitely multiplied, we get an idea of what goes on all day in this mill.

So too with our dream-life. When at night our cerebral activity comes to rest, and only a few impressions continue to work as individual after-images of what was a confusing medley during the day, we begin calmly to investigate our mental activity. Here too, we should begin with small things. Thus the dream may be a revelation for us; just as people used to say "warned in a dream by divine revelation" etc. Now let us see.

What is a dream? — or first the other question, what is sleep?

The difference between a machine and a living organism lies in the fact that the machine can continue working all the time, while a man needs rest. On the other hand, the machine wears out, while a man, at least in the prime of life, increases his strength, the more he works. This is rendered possible through the periodical alternation of work and rest, i. e. through an ebb and flow in our oxidation; for with both mental and muscular work the reaction of the fluids in our tissues becomes less alkaline, and so we know that the exchange of energy must be accompanied by acid-formation. These chemical variations are quite as salutary as the variations of pressure which we have already mentioned (page 145). Sleeping and waking also represent a chemical periodicity.

When we have been working the whole day long, there comes a time when the muscles are too sluggish and tired, the train of thought too slow and confused; and whether one wishes it or not, there is finally a time when our conscious life is at a standstill. That this periodicity mostly coincides with the day and night periods of our earth is only an economic adaptation to this glowing mass of matter which we call the sun, and which controls us so much in every respect.

Because nothing in Nature is complete, neither is this rest complete. A few trains of thought remain active for some little time in our minds, and the shadows that flit through our brain during sleep, we call the dream.

Thus considered the dream brings us nothing new. There are originally only nebulous after-images, but in our waking hours, after a while we expand these much as we expand our impressions in the daytime. In our dreams we modify these after-images, these memory pictures, and interweave them in all sorts of combinations and associations; we construct

whole stories with the most daring changes and transitions, just as in our waking hours our thoughts sometimes leap from one idea to another without apparent cause.

Experience teaches us that in the dream-life those memory-pictures are especially liable to emerge, which have produced a deep impression upon us during our waking hours, but whose possible consequences we have not thoroughly exhausted. Thus we do not reproduce in the dream life the cares and sorrows that have exhausted us and tired us out; but the images of these rest during our sleep; and is it more especially the more evanescent wish-ideas (in Freud's sense), or the opposite, - some terrifying images that continue their course in the dream.

Indeed the train of thought at night in dreaming is not so specifically different from the train of thought in the daytime as one is generally inclined to believe. A relative difference, however, lies in the fact that the influence of the reality around us, and also the control of our consciousness, those two great external and internal influences which are both charged during the day with keeping our phantasy within certain bounds, are almost entirely absent during sleep at night. And so it happens that in sleep our after-images are changed into all sorts of fantastic constructions, a fabric woven by the brain, more daring than we could have imagined in the daytime. Indeed in dreams we can be in two places at once, or be taking part in two different phases of our lives simultaneously, which appears very fantastic and can only otherwise be produced in a bioscope, when two magic lanterns are focussed on to the same screen and are allowed to project their pictures in turn. First of all, when we begin to dream at night, things go tolerably well, inasmuch as at first our dreams include the thoughts which last occupied our minds before falling asleep unnoticed and quite in a regular manner; we scarcely feel the transition, and we only realise that we are more or less floating in dreamland, when we feel that the flight of thought is becoming a little too fanciful.

But if we go on sleeping, our phantasies can take loftier flights, still further removed from the reality; especially in the morning just before we wake up, when the whole dream-world is suddenly extinguished. It may, however, often happen, that during a great part of the night our brain has been

plunged in such deep slumber that on waking we can not remember all that we have dreamt, and perhaps indeed we have not dreamt at all.

Because our dream-pictures are founded on after-images which are not always drawn from reality, but are often borrowed from our phantasy or from earlier dream pictures, and actual observations are lacking during sleep, so in the dream all is cloudy, indefinite and confused, and especially association is very weak. But the lack of clearness in the sensations is compensated, frequently over-compensated, according to the same principle that we have considered in the foregoing chapter under hypnosis. Because in dreaming all parts of the brain, with very few exceptions, are at rest, all the energy and attention at our disposal concentrate on some one stupid point, which we accordingly perceive as being disproportionately intense and real.

So it happens that we feel the dream, not as a weak memory-picture and fabric of the imagination, but as a regular observation of reality. The sensations of a dream may often stir our emotions, even much more deeply than the reality could ever do. We may remain entirely dominated by the sensations of the dream long after awakening. In exceptional cases we may be so paralysed by the horror of a frightful dream, that when we first awake we are unable to move hand or foot. Hence the names *Alpdruck* (= mountain-pressure) *Cauchemar* (= nightmare) etc., which were used in olden times for such dreams, attributed to possession by devils*.

This realistic, so-called dramatised character of our dreams, also plays a very prominent part in our sexual life. Especially in the sexual province there slumber in our psyche many desires and fears, the consequences of which are often artificially repressed, and which on that account, are by no means obliterated when we retire to rest. If we then experience erotic dreams, we feel on awakening exactly as if we had really performed the actions depicted. So our sexual life is revealed

* From this overpowering impression of our dreams follows quite logically the naïve beginnings of the dualistic conception of body and soul. While the body lies still as death, the spirit makes long excursions in strange places, only resuming its place in the sleeping body as the subject wakes up again.

to us in dreams, even when everything sexual has been concealed from us during our education. Nature teaches us her secrets naively and innocently in our dreams. So she points out to us the sexual path, and we are consistently stimulated to the exercise of sexual functions; for a mental image, and especially such a vivid one, predisposes us to actual deeds.

This is one of the most dangerous factors in our lives, through which the door leading to debauchery may easily be opened. Lucky is he who has parents and friends with whom he can speak freely on all subjects, so that they can correct for him what is defective in the teachings of Nature. For all the errors of youthful fancy also become dramatised in our dreams (see page 165). And if in our dreams we do things of which we ourselves stand in horror, this experience must warn us how far we may stray, if we cannot master our sexual urge.

Up to the present we have only considered dream-pictures in so far as they are produced by after-images, because in sleep the real outer-world remains a sealed book for us. But because nothing in Nature is absolute, this exclusion of the outer world is not complete either.

Our eyes are indeed closed, but a flash of lightning or a bright flame can still reach them, while the sound of shots or loud cries can penetrate our ears. Such sudden strong impressions often mingle in our sleep with the after-images of our memory, sometimes in a very curious way. For instance an alarm clock, going off in the morning, may at first make us dream of a fire alarm, and then wake us effectively with its rattle.

Processes which are going on within our bodies are especially difficult of exclusion, even if they only produce dull sensations. An overloaded stomach, difficulty in breathing, an impure atmosphere in our bedroom, all these must be reckoned with. These are influences which may continue to work all night, perhaps becoming worse as they go on, till at last we are awakened by most oppressive dreams. And it is just such long-continued impressions which govern our feelings and our entire situation in the dream, much more than the momentary external influences above mentioned.

So if after awakening we find ourselves so thoroughly under the impression of the dream, this may be of the greatest service to us as an indicator of all sorts of prejudicial influences, which we had scarcely noticed while awake, but which now enter our consciousness, because all other influences having vanished during sleep, we have felt these impressions so very strongly and have dramatised them in our dreams.

Thus I remember once, when the ordinary causes of troubled dreams, such as indigestion and alcoholic drinks were carefully excluded, I experienced a remarkable oppression and feeling of anxiety in a dream, and thus was led to suspect traces of carbon monoxide gas in the bedroom, coming from a stove or a leaky gas-pipe, so slight that when awake I certainly should not have perceived them. And later on, when central heating and electric light had superseded the old-fashioned systems, I could gauge the freshness of the air in my bedroom from the nature of my dreams. If I dreamt of a scene in a closed room in which I felt hemmed in and oppressed, it was because the atmosphere was not very pure; but if I dreamt of an icy wind blowing over an endless waste of water, that indicated that the windows were open too wide.

So dreams may be revelations to us* not only of what is already living in our memory as an after-image, but also of what is in the hygienic sense an actual menace to our health or even to our lives.

If in the day-time we really act on the hygienic warnings which have been whispered to us in the stillly night, we shall soon observe that even in the day-time the same causes produce the same effects as when we feel them in dreams, and how greatly also our unconscious disposition may be improved during the day by these lessons, otherwise we might have remained all day irritable and cross, bewildered by the thousand-fold influences of daily life, without knowing the real reason. And now we can better understand why one man feels so much

* I have known of cases in which a dream seemed much more like the old ideal of a saving revelation, for instance, one in which a man was hypnotised by certain impressions and became filled with enthusiasm to invest all his capital in a daring enterprise. But he was so set against it in a dream that on waking he changed his mind at the last moment, otherwise he would have been ruined.

more happy and lively than another; our dreams can show us the right way in this respect.

Amongst the actual influences of our own body which force themselves upon us during sleep the most prominent are the congestive and secretory processes in our sexual sphere. Thus we not only perceive in our dreams the after-images of sexual desires and fears of the day but also the real ones which are manifest during sleep, when the sexual urge makes itself felt most strongly. So there is a double reason why the sexual demon tries us so severely in our sleep, and does not let even St. Anthony rest.

Are we then defenceless and powerless before these sexual impulses, which are even further dramatised in our dreams? — Ideas which predispose us to the worst follies and errors? No, for here also there is a chain of causes and effects, and so we can learn to control this sphere, if, rendered wiser by our own experience and through our dreams, we can discover the influences which cause sexual over-stimulation e. g: foods and drinks, spices, night-clothes etc, so that we can avoid them in future. This all depends so much on individual feelings (see page 184) and is so difficult to check in the daytime, that after all it is only our dreams that can point out the right way.

The more we learn to recognize these causes, the better we shall be able to consciously avoid them, and thus to control not only our sexual life, but in time, our erotic dreams as well. Only the normal urge will remain. Fortunately so, for it must persist because so much energy is thus created. But this normal urge will be ennobled. For the more observant we are of all these hygienic influences and the purer the atmosphere in which we live and sleep, the purer will be our dreams at night and our tendencies during the day. Our whole sexual life will take on a kinder and purer character, the more we listen to the teaching which Nature reveals to us in our dreams.

37. Sexual Teaching.

For the majority of parents and teachers the sexual life is a terrifying apparition: for sexual maturity makes young people not only energetic and independent, but often obstinate as well, and what is to be done then?

Even in adolescence it is difficult to direct the awakening sexual life; and how easily later on may a quite unexpected caprice of love suddenly spoil everything that has been so laboriously attained by a careful education! Most parents try to keep their children ignorant and naïve in this respect as long as possible; they would even be glad if children would always remain children.

But children soon become aware of this negative standpoint and then lose all confidence in their parents; they feel instinctively that the parents have not really got the good of their children in view, but are rather obeying a traditional dogma which is hated by the children and drives them to resistance. They now begin to seek explanations elsewhere, and are most likely to get them from impure sources. But they keep all this a secret from their parents, and when the latter notice evil tendencies in their children, the proper time for their protection is already past.

Has not the time arrived, when parents should be reasonable, and instead of honouring the rule to "hide whatever you can", should at last do the contrary, and develop, ennoble and further the sexual life, and direct it into the proper paths! Young people would then be able to trust their parents and prize their advice in all things; and if they perhaps made one false step, they would be honest about it to their parents, and would never be so depressed as is now too often the case.

With boys an asexual training almost always fails; with girls owing to the more hidden situation of their organs, it often succeeds only too well. Thus unnatural, weak-minded girls are brought up, who remain children even when grown up; and having been purposely kept in such ignorant simplicity, as soon as they are exposed to the temptations of ordinary life, they fall only too easy victims to the seducer. I have often seen such cases in rescue work among unmarried mothers.

And then when these ignorant girls marry they may be very unhappy; this does not only occur in novels. Medical men often see cases like the following, especially in strict Catholic circles. A young lady was brought up from childhood to regard everything sexual with horror, and soon after leaving a strictly kept boarding school, she married. The moment she was married, she was frightened by her husband's sexuality, he was rough, brutal and vulgar, as she had learnt to fear. The first night was a night of tears; the bride felt deeply wounded and insulted; for years she bore the unbearable with the resignation of a martyr . . . until at last a distant relative appeared, who understood her better, comforted her, fell in love with her, and gradually awakened a reciprocal passion in her.

These are the fruits of such a carefully guarded training! And it must not be thought that this is an exceptional case, or that I have painted it too black. Extraordinary and almost incredible, is another incident which actually happened a few years ago in the village of H. . . .

In this case a little girl was perhaps three years old when her mother had a little baby boy. The girl was already no doubt imbued with the idea that a certain organ was something very improper and shameful. Imagine however, the mother's horror, when she came into the room one day, to find that during her short absence the little girl had cut off her baby brother's member with the scissors! In the child's mind it was quite logical to remove what was hateful and wrong! A neighbor was called, from whom I learnt the whole story later, but the poor little infant bled to death in a few minutes. What a warning against such teaching!

Poor parents who in entire ignorance of the beauty and sacredness of the sexual life, are so naïve as to choose as a foundation on which to build the honor and chastity of their sons, a horror of everything that is naked or strange, or that excites a feeling of modesty! They forget that as soon as their sons have learnt to understand this association of repulsion and pleasure, the repulsion will more easily turn to pleasure than the pleasure to repulsion. Inded then it will be: the more repulsive and dirty the more pleasurable. Thus it happens when the parents try to be more clever than Nature. And if the

normal sexual act is constantly represented to them as something so repulsive, they will be led to prefer masturbation and homosexual practices.

Sexual education is only a part, though a very important part, of our whole education. We should master our reflexes; first in ourselves and then in little children.

In the very first days of its life the doctor often notices quite well that the tiny baby is spoilt and tended immoderately, that it is nursed and fed the moment it cries, even when it cries because it has been given too much! How can people expect that the little one will be able to control its reflexes later on? The usual rules of bodily cleanliness prepare us for sexual purity.

With regard to his childish erections, the little boy may be taught later from what accidental causes these may arise, although at this age no sexual need exists; he will then later on not fall into the general error of which we spoke in chapter 20.

He should learn to control himself in the years of puberty; he who cannot force himself to continence in his youth, feels miserable later when he is married. And the younger one acquires this virtue the better; for the more one is accustomed to indulgence the harder will he find the task.

To what extent one should demand absolute, and to what extent rational standards when the sons are grown to manhood, is one of the most difficult questions the parents must decide for themselves. Views on this question and our ideals differ too greatly for any general rule to be laid down.

Control is the first educational step towards inculcating good habits in children; we have already shown in chapter 34 how their own free-will can be directed into the right paths. That this task is so difficult and always only partly successful, is due to the intricacy of the problem. So we must be satisfied even with partial success. And in regard to many points, each generation must go a step further than its fathers and forefathers went. This often appears to us to indicate a failure, but it really gives the best proof that our training was right.

In this work we have dealt with most sexual details in their proper order. The most effective method for all sexual education is the co-education of both sexes from the very beginning. We often think this to be a modern ideal, but in reality it is only what we nearly all had, when we grew up in a family as boys and girls together, to the great advantage of both. Only now this same principle is to be carried a little farther; education as a whole has become more of a public institution.

The artificial separation of the sexes during childhood is one of the greatest mistakes of the dualistic view of life, recalling the medieval monastic ideals.

Practically it is a very convenient way of simplifying supervision. But it artificially excites curiosity, and provokes an exaggerated sexual consciousness. And precisely on account of the diminished necessity for supervision, other evils often flourish unhindered.

Fortunately this artificial separation is less practised in recent times. This is more necessary because the number of children in families is on the average less than formerly, and so it becomes less common for many brothers and sisters to be brought up together at home. So much the better, for to grow up with other children gives a much broader education, and a better preparation for all the social virtues, than the former narrow minded family egotism, when "we" and other children were sharply contrasted.

Especially during adolescence, in the grammar-school or the college, and later at the university, during the last century co-education has brought about a fundamental change in the mutual relationships of the sexes. In the good old times people spoke either of "friendship" or of "being in love", and the hero of many a novel worries himself with the question: "is it love or friendship that I feel?" Now however, every school-boy has 100 girl-friends, and every girl 100 man-friends, with all the intermediate stages from 1 % of being in love and 99 % of friendship, to 1 % of friendship and 99 % of being in love. And then there are scores of degrees of dislike as well! And if finally one of them gets engaged it is generally with someone else altogether, or with one of whom had always said: "I'm sure I can't bear her!"

Yet there are still people who are terribly afraid of co-education; and they talk about the most dreadful things that have happened as a consequence, yes, even of most shocking cases. As if terrible things and shocking cases had never happened before the institution of co-education! Even between members of the same family one sometimes sees the most ridiculous things. Once when I was attending a dying infant, and the mother was standing by the cradle with me, I saw in a bed behind her a boy of about 8 and a girl of 5 (they were born in the East Indies) making the movements of coitus, quite naively, like lambkins playing in a meadow. The same thing happens in older children. I remember a well-to-do but somewhat dissipated family, where the daughter had to be locked in her room every night because her brother would not let her alone. In another careless family the son was lying in bed with a broken leg in plaster bandages, and his grown-up sister was nursing him. One day when I called in unexpectedly, I found the big sister shamefacedly hiding under the bedclothes instead of being on her chair at the bedside. Of course as long as children are children, they should be looked after, with or without co-education.

People who are entirely against co-education, should not have more than one child in the family, but that would indeed be going too far, for nothing spoils a child's character more than loneliness and boredom. This is a far greater danger than co-education. Indeed the proverb "loneliness is worse than vulgarity is right". A babbling brook will often carry slime and dirt along with it, but a stagnant pond becomes ever more foul.

The opponents of co-education insist that children should only associate with their own sex, but then they would only get their first sexual impressions from members of their own sex, and we know how decisive first impressions are for the whole after-life. Thus the separation of the sexes is the surest method of confirming homosexual tendencies in young people, if they have any predisposition of that sort.

The difference in sex is specially shown in children by the difference in dress; but one should always display tact in this matter, not to draw attention to the difference too early or in too striking a manner. Only when the distinction is very

discreetly made, is it a means of paving the way for the later essential distinction.

Most parents however, are rather easily tempted to exaggerate the difference in sex somewhat too early.

Mamma finds it so delightful for little Louise to behave like a little coquette, or for tiny Karl in his first pair of breeches to stalk proudly up and down and imitate his father. Many parents go a step further and add to the unnecessarily exaggerated difference in dress, a difference in rights and duties, in the freedom of movement of the two children and even in the amount of pocket-money. So they purposely cause envy and disappointment on the one side and a brutally domineering spirit on the other. And all this because the parents thought it at first so funny.

It is still worse if the parents carry their nonsense with their children's clothes so far as to dress up a boy like a girl and curl his hair; they then run the danger of developing the failings of both sexes in him, and of making him a pert and arrogant creature. And if girls are dressed like boys there is the same risk, but in this case there is at least the advantage that the girls get rid of a lot of prejudices, and are freed from many conventional and unhygienic restrictions.

Furthermore this formal duplicity may really disturb the sexual differentiation, which should never be artificially disturbed, especially if there is a possible homosexual tendency present. From Dr Magnus Hirschfeld's celebrated book, "Die Transvestiten" we see what a preponderant rôle dress plays in homosexuality. It is true, as we have seen in chapter 4, that the sexual urge is a predisposition caused by particular organo-chemical substances, but this urge is not always so absolutely differentiated in the one or the other sense, that it may not be modified by youthful impressions, example, habit, training and self-training, and either diminished or reversed.

While we are on the subject of clothing I wish to mention that tightly fitting clothes should always be avoided for reasons of hygiene; there should be no tight bodices for girls nor tight trousers for boys.

Nor should the circulation in the pelvic organs be interfered with by too long sitting, as is often the case in schools. This not only occasions artificial irritation of the genitals, but also

interferes with the metabolism in these organs, preventing them from properly developing, which is of such great importance for girls, because it may make child-bearing such a martyrdom in later life. For organs can only develop in proportion to their metabolism.

In this chapter we have spoken all the time of the parents, but this does not mean that they have the success of the education in their power. In the sexual sphere in particular, there are other influences of far-reaching effect which one cannot always anticipate. The older children grow, the less do they remain under their parents' influence, while economic and social influences make themselves continually more felt.

The children's permanent character is only finally formed when they have to go out into the work-a-day world and struggle for existence. The parents have only been able to lay down the general lines. Pain and difficulties can never be avoided, and even a broken engagement may leave behind it a precious treasure of experience of life.

38. Sexual Enlightenment.

The first introduction of the child into the mysterious world of the sexual life, which is such an acute question in these days, was once upon a time no question at all, for originally the sexual life was no mystery whatever.

As the morbid outgrowth of a dualistic view of life, in the course of time sexual ignorance and sexual secrecy has become the ideal and the privilege of the "better" classes, who may permit themselves this luxury. Yet everywhere in the country, and in our great cities where people are still living in a more primitive and natural manner, everything is much less concealed. In some exceptional cases this leads to great evils, but as a general rule I have found more real modesty and chastity in these simple and natural people than in the rich. It is only a pity that the spirit of imitation which leads to a preference for the errors of the rich has not been ineffective, and even amongst the most reasonable people the bad example of hypocrisy filled with unchaste thoughts is ever more honoured, while at the present time the more educated families are at last beginning to abandon this stupidity as far as they themselves are concerned.

The more everything is artificially concealed at first, the greater is the necessity afterwards for judicious enlightenment. It is however very hard to correct what has once been spoilt. For here we are dealing with the souls of children, who are already in a state of more or less sexual exaltation through the old regime of hypocrisy. Here we must individualise very tactfully, for it is a biological law that morbid cases display much greater differences than normal physiological cases. And thus the characters of our children, falsely developed through concealment of the truth, diverge enormously, just as the educational tact of the parents differs enormously.

In family circles opportunity is readily found to broach the sexual question, perhaps through an event in plant-life or animal life, or a pregnancy, or a chance remark of one of the children. These opportunities are generally neglected, for people think "there is plenty of time". And then comes the time, almost before one expects it, when the children are no

longer so innocent, and evil influences have already begun to make themselves felt.

I was quite astonished once at the brutal way a mother answered her little 8 year-old son when he asked "Mummie, where do babies come from?" She replied: "Who's told you about it?" "I don't know, mummie". "You know very well; who has been talking to you about it?" "Dietrich who lives next door" (a much older boy). "And what did Dietrich say?" The boy repeated a little stupid nonsense. The mother then said: "Dietrich knows nothing at all about it; when daddy comes home he will teach you better." But I never heard whether when daddy came home he taught the boy a little of the truth, or gave him a box on the ears. Perhaps the mother had forgotten the whole incident before the father came home; and the boy would be all the more pleased.

In the school it is not so easy to find a good opportunity; but lessons on plant- and animal life, or the story telling hour afford sufficient opportunity even in the primary schools to give the scholars an elementary idea. Furthermore it is absolutely impossible to instruct them correctly in the life-history of plants and animals without touching lightly on the subject, unless it is purposely intended to keep them in ignorance.

A little curly head may unexpectedly pop up and cry: "Please teacher, where is my little brother coming from?" The teacher: "What do you mean?" The scholar: "Yes, mother said I was going to have a little brother and I asked her where he was coming from, and then she said she couldn't tell me now, but I should know when I was bigger." Teacher: "Fritz, what a silly question that is for you to ask: where do the little brothers and sisters come from! Where does everything in Nature come from? Why, everything grows. You all know very well that little children grow too, don't you? First of all they are so small that they cannot be seen and then they keep on growing until they are grown up. You are half grown up already. Then again, when things grow it is not like building a house, where we bring wood and stone together and lay the pieces one on top of the other; growth comes from the inside, like the pips inside an apple, which some day may grow into new apple trees. Just in this way also the

first tiny beginning of a human being grows inside the body of a grown person, and by and by becomes a child and grows up too. Otherwise it would not be possible."

"Does the father also have children?" asks one of the scholars. "No, the father does not have any children; he has his work outside to attend to, but the mother looks after the children, doesn't she? And that is why your mother loves you so much, at least, when you are good. And that is why you should always be good and never disobedient. Your mothers take a lot of trouble with you, especially when another little brother or sister is growing; you must understand that it is rather hard for her. The little baby grows rather big, and then it seems as if everything in her must either bend or break. But when it is all over, we are all happy, and then you can play with your little brother by and by."

Of course the older the scholars are the further one may go with the explanations. Sooner or later we come to the definite question, what part the father takes in it. This seems to be an almost insuperable difficulty with children. A mother of delicate feeling once showed me a good way out.

I was attending a confinement in a simple but honest family and all at once a cock began vigorously treading a hen. The little girl, a pretty child of about 7 years of age, asked her mother: "Mammy, what is the cock doing, is he biting the hen?" "No," replied the mother, that has to do with the laying of eggs, you like nice fresh eggs, don't you, Annie?" "Does the cock lay eggs then, mother?" "No, you know very well only hens lay eggs." "But mummy, what is the cock doing that for?" Violent labour pains interrupted the conversation; when all was quiet again, the child asked once more: "But what does the cock really do, mother?" "You should ask the doctor; he can explain much better than I can." "No, no," said I, "you are telling her so nicely about it." And then she told the whole story.

"If there is no cock there are no eggs, and if there are no hens there are no eggs either. Each of them can only make one half of the egg: the cock has half-eggs, so small that they cannot be seen, and the hens have tiny half-eggs just the same. The cock lays one of these half-eggs in the hen's warm body. That's what he was doing just now.

And then when the two half-eggs have become one egg, and this has had a few weeks to grow big, the hen lays the big egg in the warm nest in the fowl-house. If it is left there and the hen sits on it and keeps it warm all the time, then a little chicken grows out of it; or if you eat it instead, then you grow and become a big girl."

The child wanted to hear more, but her mother's pains increased, so she was sent to a neighbor's.

On some such plan quite a good explanation may be constructed. It can certainly not seem strange to any child that the little egg should remain for a time in the body and then pass out, while with the more advanced children one may speak of how it lies midway between the urinary canal and the intestine. How far one may go in this direction, depends of course, upon whether sufficient anatomical instruction regarding the human body has been given or not.

In the secondary schools we can briefly trace the course of the development of the individual from the ovum to man, and finally the sexual evolution, as we will attempt to do in chapter 40. Perhaps here and there it will also be possible to give the pupils a correct insight into cell-life by means of the microscope or cinema.

If by chance the child has already acquired some impure impressions of sexual things, he must be energetically reminded of the seriousness and sacredness of this subject, and the banal will then disappear from his mind. Much depends here on the teacher's tact.

It is easy to repress untimely mirth if one of the scholars as an "enfant terrible" says anything disconcerting, by promising reward or punishment according as the scholars know on the morrow what has been taught to-day; a few words of foreign origin that they must learn with it, work wonders. Thus an impression of impure feeling will be changed into one of proper modesty.

But after all there is one difficulty that the schoolmaster cannot overcome. He is master of the situation in the school; if he were not sure of himself there, he would not have broached this subject. But in the scholars' homes! Although he may have carefully explained the importance and sacredness of the subject, it is not his fault if the child chatters stupidly

about it at home, in and out of season. Then the storm breaks: "Child you ought to be ashamed of yourself, where did you learn such things? Good Gracious, do we send our children to school to learn these things. Let the fellow hold his tongue!" and so on. Although that does not matter to the teacher, it is not very agreeable. At any rate the storm does not last very long, and the child will then be thankful for the truth on this problem about which his parents had always deceived him. And the next time the child will be more careful.

But the child's words may call forth jeers and cause jokes when he is talking, not with his parents, but with narrow-minded people. Poor child, to be trusted to such people! Yet in this case it is doubly good that the teacher has done his duty; otherwise the narrow-minded people would have had the first word, and all the good impressions would have come too late. Now the teacher has immunized the child beforehand, and he will feel an aversion to anybody shameless enough to profane such a holy subject. The teacher has saved the child in time. And if by any chance he is blamed, and told that such things are no part of school instruction, he may reflect that such reproaches are always heaped on those who truly try to do their duty; and always by persons who neglect to do theirs.

Of course every teacher will have sense enough to make a very cautious beginning, if he does not know the state of public opinion in his district, so that he can first feel his way, and at first he will only give some little explanation appropriate to the occasion. He will then almost always find that this is very thankfully received.

IV.

BIOLOGICAL SECTION.

39. *Introductory.*

It is of the greatest importance to study EVOLUTION because through it we gain a more objective foundation for our judgment; for we may see to what extent our theories correspond with the line of progress of Evolution, and this is the best criterion as to how far we are right, and to what extent we may expect the fulfilment of our ideals in the future.

Such an objective standard is specially needful in the sexual sphere, because here opinions are so divergent. To one man the sexual life is the chief motive of his existence, to another it is, with equal exaggeration, only a temptation of the senses, except when it aims at reproduction, for which it is indispensable.

These two points of view are so diametrically opposed, that even the manner of presenting evidence on either side differs. In all other physiological functions, such as eating, respiration and the circulation of the blood, it is taken for granted that the efficiency of the function should be measured by the degree of well-being that is felt. As soon however as the sexual life is under consideration people are in the habit of turning things upside down. The contrary principle is applied to this function. Here we have a special dogma of original sin, and people are inexhaustible in telling us in all sorts of ways, how, ever since the days of paradise, the carnal appetites have been temptations that lead to Hell.

This dogma has become the corner-stone of a rhetorical dualism which sees all evil in the Material, all good in the Spiritual. But it is perfectly clear that the Material may be very wicked or very good, and the Spiritual may be very sacred or very profane. The more we grasp actual facts, especially the history of evolution, the less shall we go astray, and the less need we expect great disappointment in the future.

We have already (see pp 123 and 151) decided that the extraordinarily intense feeling of pleasure is the result of the great internal and external obstacles which are always attached to the sexual function and which must always be overcome. And it is just through the victory over these obstacles that

our energy is so greatly stimulated, and that, ethically speaking, happiness depends so much upon our sexual life.

We will now consider the sexual life in its general biological significance for the whole organic world and in its development. We shall also briefly review the pre-historic and historical details of the love-life in both man and animals, and we shall see how the sexual impulse was originally only an impulse to detumescence directed to the secretion of the reproductive cells for the relief of a local internal tension, and that it was only much later that it broadened into the impulse to contraction — to a desire to hold another in the love embrace. This broadening of the Material to the Spiritual is nowhere seen so beautifully as in the history of sexual evolution. It is all the more important for us because we meet with it continually in individual evolution, particularly in the male organism.

40: The first appearance of the sexual modification of growth.

a) The asexual period of evolution.

In this chapter we shall touch on a question to which, so far, too little attention has been paid by the scientific world and which nevertheless is certainly one of the most important fundamental problems of the whole of Biology — the origin of the sexual life.

In embryology at first one only knows vegetative growth and the vegetative method of reproduction. We must now try to find out what was the first cause for the sexual method of reproduction to develop side by side with the vegetative method.

On account of its superiority in the Darwinian sense, the sexual method later entirely superseded all vegetative methods of reproduction in the higher species of animals.

A brief review of its evolution will best demonstrate this. In recent times sexual processes in lower organisms have been carefully studied, but the asexual stage, the most primitive of all, has up to the present been greatly neglected. We shall now endeavor to repair this omission as far as possible, even if only hypothetically at first; proofs will then be further adduced from present day experimentation.

The first, most primitive forms of animal and vegetable life, which lived in water or moisture, were, as is now generally admitted, unicellular organisms; just as nowadays the most primitive forms of life, such as bacteria, yeast-cells, many algae, amoebae, etc. still exist as unicellular organisms in countless quantities.

They grow by the absorption of nutritive substances, and when such a cell at last becomes too big and powerful to remain organised as one single cell, it reorganises itself and splits into two new individuals; an increase in numbers which is quite in accordance with the ordinary vegetative growth, and which, if the process is repeated at short intervals may become very considerable, although quite asexual.

Just imagine: if all the conditions of life are propitious, the hay bacillus doubles every twenty minutes, and even an amoeba can

subdivide every 10 to 20 minutes. These are very different figures from those of the human national economy, where doubling of the population in 35 years is considered to be very rapid*. And yet in the most primitive times there was no sex; just as now in many unicellular organisms sexual differentiation has not yet occurred, or only happens as an exception.

But they were not worse for being sexless. On the contrary. In this most primitive, unicellular stage, each of these cells maintains its complete individuality throughout its entire life-cycle, without being dependent on other cells. If through lack of mutual support myriads of these individuals constantly perished, yet it was a great advantage of this absolute individualism that even when the available nutriment was minimum in quantity, there have almost always been here and there a few isolated cells which found something that allowed them to continue their infinitesimal existence, so that the continuation of the species was more or less assured.

We are only too ready in studying ETHNOGRAPHY to idealize the natural primitive conditions, but here we should have a genuine reason to wax enthusiastic over this rich but silent organic primitive world, for every one of its individuals enjoys absolute freedom and yet always without passion or suffering.

Indeed through their immense energy of growth, their countless numbers, their simple and frugal mode of life, and their almost limitless powers of resistance, these unicellular organisms have always in competition with the higher forms of animal and vegetable life shown themselves to be the most indestructible. And all our later complicated organisms, no matter how superior they may be by virtue of their higher differentiation, are, mankind included, often defenceless against these tiny intruders, to whom we ourselves must finally fall victim; and only cremation itself destroys the intruders with victims.

All our modern hygiene does not serve to bring us a free pardon, but only a postponement of our execution. But when the organic world had already long been in existence and had

* And amongst the more highly organized plants the most terrifying spectacle of overwhelming fecundity occurs in the vegetative reproduction of the *Elodea Canadensis* and the *Azolla Filiculoides*.

collected here and there large quantities of organic waste matter, it must often have happened that somewhere or other fruitful soil was produced, a fertilisation by means of which the plant world (and as a secondary consequence the animal world also), was enabled to develop more luxuriantly than before.

The favored organisms could then grow so rapidly that the next cell-division had gone on to complete separation. Thus for instance in the bacteria which generally exist as single cells, when their growth proceeds quickly, they may remain attached in larger or smaller chains or groups; and the yeast cells (*Schizomyces cerevisiae*) only become twin-cells and a continuous film of mould (*Saccharomyces mycoderma*) only forms, if their particular nutriment is present in excessive quantity. So too, formerly as soon as there was abundance of nutriment, at first groups of cells, and later division of labor, and finally multicellular organisms must have developed*. This would have been impossible except for the presence of an abundance of nutritive material.

This modification of growth, the formation of multicellular organisms, signified at that time a new era in the organic world with possibilities of evolution hitherto unsuspected. From the unicellular green algae strands were evolved which under favorable conditions grow continually longer and may even branch. By their side parasitic colorless fibres of mould formed, as if they were descended directly from the colorless bacteria. The multicellular animal organisms too, then found an excess of vegetable substance available as nutriment, and so were able to assume greater dimensions.

Who knows how long these low forms of algae and fungi remained the highest representatives of plant life, and overran every corner of the earth, their multifarious delicate forms floating in water or spreading over humid surfaces. *Morgan*,

* Something similar may now be observed in the *Lemna Trisulca*. At the bottom of the water it produces luxuriant groups of shoots which are asexual; while on the surface it divides like other species of *Lemna* into single individuals, at any rate into small sprouts which produce flowers. Thus here we also find the sex organs only in the neighbourhood of the decomposing matter at the bed of the pool; the tiny flowering offshoots however only at the borderline where this vegetative growth is stunted.

speaking of the evolution of mankind, warns us not to underestimate the duration of this period. He says that evolution proceeds but slowly in such a primitive period, and that we must take it for granted that the more primitive a period is, the slower is the process of evolution and therefore the longer the period. This is applicable here, if anywhere.

Meanwhile each cell in the colony retained its primitive individuality to such an extent that if separated by any mechanical disturbance, such as wave or wind, each fragment of the collective organism, even if only a single cell, could maintain its own existence and continue vegetative growth alone. Thus reproduction was unlimited although still always *asexual*.

What must then have happened each time, when, later on, the energy of growth gradually diminished, or was even so much reduced that again as at first multicellular growth could not be further maintained, and yet too much growth-energy* was present to be condemned forthwith to death and disappearance? How easily in the course of time a certain degree of exhaustion may occur, even if only caused by the repeated cell-division! For cell-division is evidently no use, unless the two newly-born miniature cells grow to be as strong as the mother-cell was.

Experimentally it has been proved in regard to the lower organisms, that under artificially produced optimal conditions they can continue to reproduce throughout long periods by means of vegetative cell-division, constantly dividing without showing any signs of exhaustion; but in nature such optimal conditions do not exist; and so, sooner or later, there ensues a condition of internal exhaustion caused by the continuous cell-division.

In addition all sorts of unfavorable external influences may

* We may observe something analogous in the unicellular organisms. If after a period of luxuriant growth the growth-energy fails, some of the individual cell-particles may be so resistant that they survive, and in a favourable case can evolve afresh into new and vigorous single cells. On account of the striking analogy of this process, as if it were already a prototype of spore-formation, these cell-particles are also called "spores". In the higher classes of unicellular organisms the swarm-spores may rather appear as analogous to the reproductive cells.

easily hasten the occurrence of this internal exhaustion. The richness of the soil is often rapidly exhausted by such luxuriant growth; and even without this a loss of balance may occur each time that these multicellular organisms in their growth finally approach the limits of their means of existence, for instance as soon as the trees grow too high, or if water plants grow on the banks.

In all these cases the original condition recurs, so that, as in primaval times, the further development of a multicellular organism becomes impossible beyond a certain point; single cells alone will then, as formerly, be able to continue developing.

However we will investigate not speculatively but empirically what we observe nowadays in such exceptional cases. In all these cases we observe, together with abnormal manifestations of nuclear subdivision, the occurrence of abnormal processes of growth, which finally lead to the formation of single cells.

Thus we see for instance, in the common blue-green mould (*penicillium glaucum*), the extremities of the fibres that grow out of the moisture suddenly produce a brush-like collection of innumerable small end-fibres, which rapidly break up into their individual cells. But this formation of spores takes place on a much larger scale where a larger or smaller swelling, not unlike a tumour, is formed at the boundary of its possibility of growth, and from it innumerable cells are expelled as microscopic spores. So for instance, a tiny white ball or *sporangium*, which liberates its cells as spores, is formed in the common white mould known as the *mucor mucedo*, on the tips of the white fibres which protrude from the surface of the moisture. In the common lycopodium a much larger capsule is formed in the same position; this soon dries, bursts open and scatters its spores. And in other kinds of mushroom, simular tumors on stalks are formed which open from beneath to scatter their spores, and then decay.

In this connection I think it cannot be denied that we always see this peculiar modification in growth appear as soon as the vegetative growth, after having luxurantly developed in a rich soil, at last reaches the limits of moisture and nutriment, and indeed of its means of existence, struggling desperately for the atmosphere of light and air. Then the vegetative growth

comes to a standstill, and in the reappearance of single cells as in the primitive stage, a kind of atavism may be recognized.

It is very remarkable, and I will state at once that with sexual phenomena it is always the same story*.

Firstly some hypertrophic growth as an external expression of greatly increased reserve energy, and then a separation into single cells, as an adequate expression of the impossibility of a further growth. Thus we nearly always have in the first place a tumor-like formation, and indeed in the higher plants the formation of flower-buds, in the higher animals the formation of testes and ovaries, by means of which in due course the reproductive cells will be expelled, just like the spores in the case of the inferior organisms.

The myriads of tiny spores are easily carried to great distances by wind and water. Many thus escape from the sphere of those exhausting influences, which gave rise to these abnormal formations, and are then able, under favorable conditions to continue to grow as peacefully and luxuriantly as before; until finally a new limitation and proliferation again occurs, often in a wide circle around the site of the original fungus**.

The majority of these innumerable spores are hopelessly lost; so their vast numbers are not of much use. Further-

* It is curious to meet with such complicated sexual processes in such primitive organisms! This shows us distinctly once again how imperfectly the sexual life fits in the scheme of the vegetative evolution. No matter how simple and uniform the principle of the liberation of individual cells may be, sexual growth must always adapt itself in ever varying forms in the various species of plants and animals, as a secondary and tardy phenomenon, and on this account it displays such a brilliant variety of forms from the first. On the other hand vegetative growth, this continual cell-division, shows us in an evolutionary way a far grander picture of a regular organization, constantly becoming more complicated.

** Something analogous may also be observed in the phanerogamous plants. We may imagine for instance a beech tree standing alone in a rather dry plot of land. The tree has rapidly absorbed all the moisture to be found in its immediate neighborhood and so arrives at an early maturity. The nuts fall thickly under the tree, and the farther from the trunk the more sparsely is the ground covered with them. Immediately around the tree itself none can germinate and still less grow up, on account of the lack of moisture, which was such an active factor in the fruit production. They can only take root and grow farther out.

more spore-formation, like everything sexual, is only localised in a circumscribed spot, while at the beginning the vegetative reproduction represents a general function of the whole body. Thus in the phenomenon of sex the increase in numbers does not seem to be the most important thing; the phenomenon of sex is rather an adaption to the economic conditions; it is indeed no rejuvenescence, but an emigration on a large scale!

Strictly speaking, spore-formation is not what we call sexual reproduction, for the spores are not yet sexually differentiated. A spore is a quite microscopic and elementary form of cell; and therefore spore-formation is only found in the more primitive forms of plant life*, and in the animal kingdom only in the sporozoa. But they enjoy the following advantage: each of them, even the smallest spore, is always capable, if it meets with favorable conditions — just like the single cells of primitive times — of continuing its existence without conjugation; assimilating its nourishment, dividing, and growing further *ad infinitum* by the vegetative method, as though nothing had happened.

Thus in spore-formation atavism comes pretty well to the foreground, because the cells that are separating have really retained the primary simplicity of the primitive unicellular organisms, and so have the power of living quite independently just as in the remotest times.

But later in the progress of evolution the case was more serious, as the luxuriant environment enjoyed by the multicellular organisms had already exerted their influence for some time and the organisms had in consequence arrived at a higher stage of development. For through their higher differentiation all these cells had already deviated too far from their original

* Because the formation of individual cells means salvation when there is a menace of extermination, it may be readily understood that the spores must always be very numerous, so that at least a few of them may reach a better environment. Among the higher species, however, such a numerous production of complicated and fastidious cells would scarcely be possible. Therefore as we mount higher in the scale we find a constantly diminishing prolificacy; which however is compensated by the fact that the higher animals can change their location, and that the higher plants possess all sorts of means for the carrying of their seeds to a distance by animals or by the elements.

simplicity to be able to lead an independent existence if cast off as unicellular organisms.

So spores were no longer formed in the higher species of plants and animals, but in these cases cells were cast off which no longer contained a store of strength to enable them to continue a separate existence. And so they would have been irretrievably lost, if there were not also formed dimorphous (or possibly at first polymorphous) single cells, which on account of their rich nutriment content attracted other cells that were less favored in this respect. Then both classes of cells were saved, because they were able to complete in each other what would otherwise be lacking from exhaustion. From this fusion then there was formed a fertilized egg-cell* (zygote.)

But it was one indispensable condition of this fusion that the cells on becoming free should not be cast off mature as is the case with spore-formation, but at as early an age as possible, whilst the cell-content was still half-fluid, simultaneously with the cell-division, just as in the primary unicellular organisms. Here too one sees an atavistic influence.

But these single cells of a higher order do not regain their original simplicity after the fusion. On the contrary, the zygote in the higher animals and in plants only survives and develops if from the first it remains for a long time embedded in the mother tissues and is nourished together with it.

Whenever such optimal conditions are provided, a new atavism soon appears in the series of events which we have already represented hypothetically: on account of the abundant nutriment and favorable environment the zygote develops again into a multicellular organism and indeed very rapidly, in the manner pointed out by Haeckel.

However short a period this unicellular stage may last, its importance cannot easily be overestimated. The spore-formation was only a kind of emigration in the dry resting condition; but in contrast to this the fusion of these two much more highly developed young cells is essentially a reinvigoration.

* Without fusion pollen cells and sperm cells can never continue to live and grow; and egg-cells only in exceptional cases (parthenogenesis). And even in those lower species which can maintain themselves for a few generations through parthenogenesis, the energy of growth must now and then be regenerated by fertilisation.

So it is then only this combination of early liberation with fusion to which we apply in the narrower sense the term "*sexual reproduction*".

b) The sexual period of evolution.

Up to the present we have considered only the asexual period of evolution, at most including spore-formation as the first attempt of nature to come to the rescue when ruin threatened. Thus we sketched out a scheme of vegetative evolution. But now we come to the period in which the phenomenon of sex becomes ever more prominent*. Because we have the good fortune to live in this latter period, the history of evolution from now on will be much less hypothetical.

The fusion of two ordinary cells occurs as a transition stage to the actual sexual phenomenon even in fairly low forms of life. Thus in the animal world in many Infusoria; in the vegetable world in the Conjugata, Zygomycetes and Zoospores, in which two ordinary vegetative cells which appear to be absolutely similar (Isogametes) fuse together. There are other cryptogams in which two cells of markedly different size fuse (a macrogamete with a microgamete).

Meanwhile the differentiation of cell-life has gradually developed so that special organs, with particular outgrowths and some variety of tumor-like hypertrophy, have assumed the function of producing those individual cells, even one special organ for the production of the one kind of reproductive cell, and another special organ for the production of the other kind of reproductive cell. We call these organs the "sexual organs" and describe as female those which produce the fewer but larger cells with abundant store of nutriment, and as male those which cast off numerous small cells without reserve nutriment. The difference between the cells makes the chemotactic attraction of the one for the other particularly striking. In the higher plants a pollen-cell eagerly combines with an egg-cell, and in the higher animals a sperm-cell with an egg-cell.

* In chapter 41 we shall show that in the course of this period of sexual evolution, vegetative growth has also developed further and has, in the higher animal forms, been compelled to yield entirely to the phenomenon of sex.

The formation of these reproductive cells has recently proved one of the most fruitful subjects of investigation. In the same manner as spore formation manifests itself in an atypical nuclear division so also the formation of fertilising cells is manifested first of all in an abnormal nuclear division called *Reduction-division*.

In normal vegetative cell-division the number of chromosomes*) in the nuclei of the two new cells always remains the same as before, and this number is fairly constant for every species of plant and animal in all their cell-nuclei as a preparatory step to nuclear division; for in normal cell-division each chromosome splits into two delicate fibres, one of which approaches one pole and the other the other pole, both bending into the shape of a U. And then finally the two poles separate, and first the nucleus and ultimately the whole cell splits up.

In reduction-division however, this separation does not occur, and in this case each pole only receives half the number of chromosomes**), which typically indicates a condition of internal exhaustion. If however a fusion soon occurs, then as a consequence the number of chromosomes will become the same as before, and a polycellular organism can immediately develop from it.

The different characters of the two conjugating cells and their origin in two different organs, cause a far greater differentiation in the descendants than the copulation of two similar cells. But at first there was still a certain amount of uniformity

* Because the cell protoplasm is in continual movement, contracting and expanding (see chapter 55), the optical picture of the chromosome formation might be taken to signify a formation of folds or the occurrence of localised concentration. The first stage of the chromosome formation might then be regarded as a stage of contraction, and the division as a stage of expansion; the U-bending as another contraction-stage and the bipolar separation as the final expansion stage.

** The fact that many authors refer to the two numbers of chromosome fibres as "haploid and diploid", i.e. simple or ordinary and double, may easily lead one to suppose that the half numbers are the normal count; but I have preferred here to take the double figures as the normal standard. This also seems to me to be the more reasonable point of view; because the dandelion (*taraxacum officinale*) for instance, effects its reproduction as a rule without fecundation, that is by parthenogenesis and normally has the number which these authors describe as diploid.

because the two combining cells had been produced by one common individual, or else by two individuals who were both bisexual and consequently almost identical.

In the history of evolution this is the hermaphroditic period of transition. And this is a further proof of the truth of *Haeckel's* observation of the remarkable analogy between phylogeny and ontogeny, i. e. between the phases of evolution of the various species and the phases of evolution of any individual. As in the evolution of the species, so too our embryonic life begins with immense energy of growth but without any trace of sexuality. Furthermore we ourselves, in our embryonic life have all gone through a more or less hermaphroditic stage (see page 24) which however soon developed further to display the characteristics of one of the two distinct series. But true functional hermaphroditism is only to be found in many of the lower animal and vegetable species; frequently in alternate generations, alternating either with asexual reproduction or with spore formation. This reminds us how in primitive times hermaphroditism may have arisen from that early stage.

The alternation of generations is well known in many vascular cryptogams, — in ferns for instance. On the underside of the “fronds” of the ferns in particular, spores form without sexual fertilisation, and these become converted the following year into a leaf-like prothallium, on which both male and female organs sprout as in hermaphrodites. The sexual fertilisation which takes place here then gives rise to a new fern-plant. And this shows excellently how much higher even in the hermaphrodite stage are the results of sexual fertilisation than those of spore formation. For the latter only produces a diminutive prothallium as though the individual development had remained stationary, as in the liver-moss, whereas the sexual fertilisation which proceeds from this tiny prothallium gives rise to a finely formed and beautifully branched fern every time!

In the further course of the history of evolution hermaphroditism has also had to yield to the separation of the sexes. This is the usual process of differentiation, according to the principle of the division of labour. The transition is evident. When by chance in one of the hermaphrodite individuals one sex, and in another individual the other sex, temporarily or

permanently fails, then the surviving function can develop all the more strongly in such individuals. Such functionally specialised individuals, for we humans are all specialised in one or the other sex, must eventually survive in the struggle for existence.

This first appearance of such one-sided development may at first apart from accidental or individual peculiarities, quite easily have been occasioned by great variations in the nutritive conditions of the various individuals. We have already seen (page 32) that luxuriant growth favours the formation of females and vice versa. I shall now also refer to *Prantl's* experiments, which show distinctly how immensely important a part is played by nutritive conditions in the history of sexual evolution.

Prantl found when he sowed the spores of the fern "*Os-munda Ceratopteris*" in soil very rich in nitrogen, that he did not get the ordinary hermaphrodite prothallia, but only prothallia with exclusively female organs. In soil extremely poor in nitrogen he only obtained prothallia with male organs. So he could at will, simply by modifying the conditions of the plant nutrition, convert the old hermaphrodite stage into one of separate sexuality, and even deliberately choose the sex.

In the animal world especially the separation of the two sexes has gained the victory. This has enabled the difference of the sexes to appear with its rivalry and its special lures, by means of which a higher civilisation and greater perfection were produced. And this is undoubtedly the reason why the division of the sexes has had such an unqualified success in the animal world, but not in the plant world where there can be no question of a conscious sexual selection. In the plant world most flowers have remained bisexual. But even here self-fertilisation is avoided as far as possible by the most varied arrangements; only in the case of necessity it was a useful resource.

The existence of two distinct sexes, this fusion of two cells of different character, if they are both fit representatives of the same species, is the summit of the sexual life. We ourselves are living in this stage, and to it we owe all our advantages.

Only increase in numbers is always rather retarded as a

result of the sexual system. For reproduction has become dependent on the combined action of two individuals, — a considerable complication in itself. And while in the unicellular organisms each cell-division causes a doubling of their numbers, the sexual fusion of two cells means a halving of the number every time. Especially in view of the vast number of the reproductive cells, frequently as numerous as the sands on the sea-shore, we must come to the conclusion that in comparison with this number the practical success of procreation may almost be considered as an exception; it is only a few that can be saved. For we see from actual experience that since in the history of evolution, the sexual life has assumed the task of procreation, the prolificacy of these higher species has constantly diminished. However the biological and economical advantages of the sexual method are enormous and constant*).

The fusion of two similar cells was a means of salvation when exhaustion threatened. The fusion of two cells is indeed a just corrective to the continual cell-division in vegetative growth; just as the doubling which occurs in the number of the chromosomes is a necessary corrective to the reduction-division.

If however two dissimilar cells fuse, then besides the above mentioned advantages there will also be an enormous increase in the variability, because among the resulting offspring some will display more of the father's peculiarities, and some more of the mother's.

And even this variability betokens an immense progress in the struggle for existence; for no matter what further events or catastrophes may befall an animal or vegetable species, there will now always be found amongst the members of the same species some individuals which have become more resistant to these prejudicial influences and more capable of adapting themselves to a new environment . . . Thus there will almost always be some individuals saved; the species will not so easily be lost *in toto*.

* So we see how much nature has improved her methods of evolution; at first especially among the unicellular organism we see the vegetative principle of mass production with mass-rejection of the unfit, whilst under the influence of the phenomenon of sex we observe the principle of improvement through constantly decreasing prolificacy.

On the contrary, precisely on account of this evolution in a different direction, according to the different environment to which they must adjust themselves, natural selection constantly chooses new varieties and new species as better adapted. So we can see why since the time of *Linnaeus* the classification especially of the higher species of plants and animals is principally ruled by the sexual organs. It is because this great variety of forms of life has only been evolved through the variability produced by the sexual life.

The tremendous influence for improvement exerted by this fusion of two dissimilar cells is shown in the most striking manner by a comparison of this function with the efforts of the cattle breeder in crossing, or of the gardener in grafting and budding. If the latter for instance grafts a tree that is strong but rather wild, and yields much fruit of small size, on to one of a more cultivated and delicate kind, which bears fewer fruit of larger size, then as a general rule the better properties of both will persist, while the inferior qualities of both will be effaced. The process of fertilisation in nature is entirely in harmony with this occurrence; the dominant hereditary qualities are brought out in this fusion of the two reproductive cells, while the recessive ones, on the other hand, will remain latent.

In support of this we may quote the following case as an example of how after innumerable vegetative cell-divisions, one single fertilisation may still be salutary when symptoms of exhaustion appear. Since the introduction of potato culture in Europe, the propagation of this plant was always effected in the vegetative manner through tubers. The plants at first grew up strong, and were fairly immune against all kinds of infection.

However, after this vegetative cell-division had been carried out by means of suitable cultivation for several centuries, there came a time when the potato crop frequently failed, and disease germs continually got the upper hand. A change from sandy soil to clay or vice versa, brought a little improvement at first, it is true, but the menace of this public catastrophe was only removed when seed was obtained by fertilisation and crossing and produced good crops.

It was a brilliant success! The old exhausted kinds were

very soon crowded out by the newly produced ones, because the latter offered far greater resistance to the dreaded disease-germs. People only began somewhat later to provide for such good results by burning the potato plant-refuse and disinfecting the tubers, and more recently also by careful selection and isolation of the plants from which the seed-tubers are taken, but at first it was only the sexual reproduction which had such a salutary effect.

DARWIN* quotes a similar case from the cultivation of oranges in Italy. For many centuries sweet oranges were exclusively reproduced by grafting (by slips and cuttings), because the growers thought they would otherwise get a reversion to the bitter type. Then the trees began to perish in cold winters, so that all kinds of expedients were resorted to, to protect them from frost. Especially during the great frosts of 1709 and 1763 they suffered great damage. They then began to raise plants from seeds, and not only were the new kinds sweet, but the trees were more hardy and fruitful, and stood the frost well.

So also may be explained that enigma in mankind, which has so often filled us physicians with astonishment, that in the poorest of proletariat families, where in the course of time the germ-plasm must certainly be damaged in many ways as a result of constitutional exhaustion and all kinds of toxic influences, children are often born as perfectly formed and healthy in appearance as the best-looking child of a well to do family. It is only a pity that on account of the unfavorable environment, these advantages are so soon neutralized; but each new fertilisation is an effort of nature to come to the rescue.

It is therefore not surprising that this sexual growth-modification which has such a salutary and refining effect in the struggle for existence has gradually taken the upper hand.

Of course at first the occurrence of the phenomenon of

* CHARLES DARWIN. *The variation of plants and animals under domestication*, London 1868 vol. II., Chap, XXIV, p. 308. From these newly produced and superior varieties the best ones are chosen and recently these have been rendered even more perfect by grafting on the trunks of the *citrus trifoliata* or *citrus amara*.

sex may have been a rare exception, even an anomaly* consequent of internal exhaustion; a reversion, an atavism, through which rescue of the species is rendered possible. Indeed even now in many of the lower forms of animal and vegetable life the purely vegetative growth is still the rule, the sexual phenomenon an exception.

But the more highly the plants and animals develop, the more inevitably must the limit of their possibility of growth be reached sooner or later; and so also in the plants that stand on a somewhat higher level, sexual reproduction has become the rule, instead of being the exception. Indeed in the higher order of plants, asexual reproduction has decreased to such an extent, that just as formerly sexual reproduction was the exception, so now in these higher forms of plants asexual multiplication has become an exception that only occasionally occurs in shoots and trees through accidental wounding, or artificially through grafting and cutting.

In the animal world we also observe the same course of evolution, which here however has more rapidly become general. Asexual reproduction was superseded in the animal world at an early period by sexual, and this higher stage of evolution soon made such progress that any further asexual reproduction was out of the question. So much so indeed that we are now always inclined to regard all reproduction and increase of numbers as being a matter of sex.

If we now briefly review the whole history of the evolution of the species, it becomes evident, that the sexual life represents a constantly reappearing regeneration. The importance of this cannot be over estimated.

Is it not a fact, that when we look back over our past lives we often long to be able to begin our education all over again? And what a blessing it would be, if a scholar could be put back again into the elementary class. Well,

* Every new factor that has appeared in the course of evolution may be regarded as a deviation from the existing norm, — as an anomaly. This common truth is perhaps particularly striking in the sexual province, as we have so frequently observed in parts I and II because the phenomenon of sex is always something supplementary, not only in the history of evolution, but also individually. In the sexual life we are always dealing with a crisis, with a forced adaptation to changed circumstances.

Nature does not argue about it; she acts. We have hardly begun to realize that some stagnation and regression are sooner or later unavoidable, when Nature already proceeds to the creation of a new generation of unicellular organisms, so that these may begin the whole process of evolution over again from the very first stages. And then in about nine months she repeats the whole history on a large scale in the formation of the succeeding multicellular generation. This is a true regeneration each time, with renewed energy and renewed possibilities of happiness. Compared with all other factors of evolution this constant sexual rebirth must certainly be regarded as an evolutionary factor of the first order.

In the process of evolution the multicellular scheme alternates each time with a unicellular one, vegetative growth with a sexual form of growth; something like the alternation of generations which appears so strikingly in the periodic system of modern botany. In the tables of homologues it may be distinctly seen that the alternation of generations prevails not only explicitly in the lower groups of plants, but implicitly in the higher ones. It is now evident that in zoology also the principle of this alternation of generations occurs with equal distinctness. In this connection we are reminded of the "nuptial flight of the new generation of cells" in chapter 7.

In many species of plants and animals each of the two phases at first had its own system of growth and its own method of reproduction; that was a true alternation of generations.

Here a very important biological law is manifested, a standard rule of universal application: cell-life can only attain its highest development through a periodic exchange of opposing influences, which mutually improve and complete each other; this is the principle of complementary periodicity. Activity and rest, feeding and fasting, luxury and privation, etc. must alternately exert their influences; just as each individual cell can only develop properly if chemically the osmotic tension, and mechanically the massage-pressure, are continually altering. So too the vegetative and sexual phases should continually complement each other.

The whole history of evolution of cell-life now takes on a new aspect for us. It shows itself as a continual play of exchanges between two complementary vicarious phases: the

vegetative and the sexual. But the transition from one phase to another, the change from the vegetative method of growth to the sexual and *vice versa* does not take place so easily. Very weighty influences must always arise before there is a stoppage in the continuity. If we wish to use the comparative method in both cases a parallel with the symptoms of disease would not be out of place here.

We only speak of disease if we want to bring out the disadvantages; while here on the contrary we are dealing with a rescue from a compulsory situation.

In old fashioned medicine such a transition was called a crisis. And here also we have at each turning-point a transition: the *sexual crisis* as an atavistic transition from the multicellular to the unicellular stage, and then the *natal crisis*, as soon as the multicellular organism must find a way out for itself.

If we only thoroughly realise that the occurrence of the sexual phenomenon still represents a crisis, much then becomes clear to us, which before we had never been able properly to understand. Now we suddenly understand a decomposition of the tissues into single cells; it is always so wonderful and what wonderful tissues, just as if they were pathological! (see Part I). Now we understand the reason for this immense resistance to the further expulsion of these single cells (see Part II), a resistance which often drives us to despair. And then we understand how the sexual function can manifest itself in so many different ways: in the multifarious forms and colors of the flowers, in men and animals: psychically by the most powerful impulses, and physically by the most extraordinary attitudes and the most complicated efforts*. Also that this function may find expression in such a fundamentally different variety of ways: alone, during sleep, together with another individual of the same or the opposite sex, even by the employment of almost every conceivable object with or without life.

The strength of the resistance that must be overcome shows

* KLOTZ in his remarkable book „Das Welträtsel Mensch“ Dresden Verlag R. A. Giesecke, 1921, is right when he draws attention to the advantages of the traditional posture assumed by animals in copulation, compared with the position usually adopted by human beings, but it must not be overlooked that many animals, especially of the marine variety, also perform the act in the same posture as we do.

us clearly why it is that the sexual impulse is so invigorating for the adult; just as a mother finds herself so invigorated after a confinement.

In this way the sexual life acts both physically and psychically as a powerful uplifter, imbuing us with the highest degree of life-energy.

c) Proofs from the present.

The scheme of evolution which we have described with the two phases that alternate periodically: the vegetative (multicellular) and the sexual (unicellular) period of growth, may still be readily observed in almost all animals and plants*. There can be no difference of opinion about that.

But the two hypothetical views, that in this alternation the multicellular stage should be regarded as the expression of a certain inhibition of the energy of growth, must now be more closely examined.

In regard to the first hypothesis: that the unicellular organisms can only develop into multi-cellular organisms, if the nutritive conditions are specially favorable, no long discussion is needed, it is sufficiently confirmed by everyday experience. For we still see in almost all species of animals and plants, that the fertilised ovum (zygote) only comes to multicellular development if it becomes embedded in the mother tissue and is nourished with it, and this indeed is the best environment we can possibly imagine for so delicate a single cell.

The second hypothesis: that the sexual growth-modification will be only called forth by too great restriction of the vegetative energy of growth, must now be more thoroughly dealt with. This question is so important because here we encounter the causal nexus of the sexual phenomenon.

We have already noticed that the spore-formation first begins to occur in the mould-filaments when the vegetative growth and especially the circulation of water has an object, but where owing to the previously accomplished vegetative

* Fortunately there always exist side by side with the species which change their phases periodically, sufficient primitive absolutely asexual unicellular organisms to serve as reminders of the earliest period.

growth a sufficient quantity of reserve-energy* is available to produce flowerbuds.

On account of the great importance of this point as a characteristic for the biological significance of the sexual life, we shall investigate this generally valid principle in all its details, beginning with examples from the vegetable kingdom. In such questions the latter possess special value, because here all complications of consciousness and all disturbing effects of subjective influences, and especially the possibility of suggestion and simulation are excluded.

After germination the leaves at first become bigger and better developed, then there generally follows a whole series of internodes, each with a normal leaf-formation, until finally the leaves become less perfect and finally rudimentary**. Then at last comes the formation of flowers***.

Thus the flower is the end-stage of a leaf-bud development and only includes the last members of the series of leaves. A perfect flower includes the four extreme members which are more inclined to be cast off — a phenomenon typical of the sexual process. The sepals are also green, and therefore serve like the other leaves for the production of nutriment.

The next leaves form the corolla and frequently are liable to fall earlier, showing modifications of color similar to those of normal leaves in autumn when they are preparing to fall;

* Careful attention to the vegetative growth is certainly one of the most essential conditions necessary to prepare the way for the sexual life. Indeed the better a plant or an animal is cared for, the earlier in general will come the time at which the limit of possibility of vegetative growth is reached. On that account it has become almost an axiom in our minds that excessive care and luxury of themselves produce sexual maturity; but it does this only indirectly. In my opinion it may be considered as much more of an axiom, that by virtue of the law of constancy, no sooner has the vegetative growth been diverted into other channels than it stops.

** In shrubs and trees even the formation of twigs finally diminishes. In fruit trees it is well known, that the less they increase in the length of the twigs, (that typical sign of a luxuriant vegetative growth,) the more reason we have to expect the formation of flowers. The fruit grows on short branches, not on water-shoots.

*** When blooming in the spring, the budding is the result of the leaf-bud formation of the preceding year, through which reserve-material was then stored up.

only in the petals the colors are all the purer because they proceed directly from the white of the first cell-rudiment without the intermediate stage with its formation of chlorophyll. The stamens are composed of a slender style and a leaflike appendage (the anther), and they bear the countless pollen-grains, which are soon cast off in large numbers and so provide the microscopic male reproductive cells. And finally the stigma shelters the egg-cells* in the depths of its ovary, i. e. in its closed fruit-envelope.

With intensive cultivation it may sometimes happen that this process of flower-formation with its four stages comes to a standstill halfway. I refer to the cultivation of double blooms, whereby the second stage (the petal formation), is constantly repeated, and in particular at the expense of the third and fourth stages, which are then sometimes entirely suppressed. Indeed by too intensive cultivation — to which we shall again refer — all flower-formation can indeed be prevented, because the vegetative growth goes on developing in full activity.

But whatever variations of flower-formation are seen, if flower-formation occurs, it almost always happens that a flower appears as the final stage of the bud-formation. The bud is then dead**: a catastrophe which is more noticeable, the fewer the number of buds.

Just as in plants the sexual life represents the closing scene of a leaf-bud formation, in many of the lower animals it only appears at the close of their existence; the male often dies soon after the act of copulation and the female as soon as she has laid her eggs. In the higher animal world and in mankind something similar is to be observed. For though

* In the coniferae and the cycades, that is in the so-called gymnosperms, the fruit-leaves or scales which together constitute the fir-cone, are not folded up to form a seed-case as in other plants, so that their seeds have one envelope less than others.

** It is an extremely rare exception when, in a rose tree for instance a little new rose springs out of the centre of a full-blown flower. Only in the cycades after a lengthy rest-period, a new bud-formation regularly sprouts out of the scar of the umbel of the blown flowers; this in its turn produces new leaves and in the course of time a new umbel of flowers; but that should not surprise us, the umbel of the cycades being analogous to a fern with its rosette of fronds.

the casting off of the reproductive cells is not delayed until the end of life*, yet it does not appear until the close of the youthful period of growth.

The whole situation is entirely different in the animal body only because the latter is quite differently constructed. The body of a plant always exhibits, just as before the beginning of all sexual life, an organisation of parts of equal value, in the higher plants there is a series of stem segments or internodes, constantly forming new segments until finally the formation of flowers appears. But since in animals the sexual method of reproduction has become the only one possible, the number of segments has become limited, and they have all grown together in one single concentrated and enclosed organization, by means of which a far higher division of labor is rendered possible.

On account of this central organization the animal body reacts to harmful influences much more energetically than a plant. At the slightest local infection by dangerous substances (for instance, bacterial poisons), a number of unicellular organisms (the pus corpuscles), form in the body, and then find their way out, through ducts or by some destruction of tissue (see page 37).

And so we see that just as in plants, so too in the animal body, the sexual crisis is called forth as a means of salvation by a certain condition of exhaustion.

This argument is splendidly confirmed by the counter-proof. If exceptionally, the vegetative growth is not hindered, the sexual growth-modification does not occur.

The more luxuriantly the vegetative life develops, the trees in superfluous masses of leaves, and mankind in superfluous fat, the less may great fecundity be expected. And breeders dread obesity in animals wanted for reproductive purposes, or in hens for laying.

* One might indeed think that the casting off of the reproductive cells should be regarded as a preliminary stage towards death, just as later our teeth and hair fall out. This analogy is however, fundamentally erroneous, for in the sexual phenomenon it is not degenerated or half-dead matter that is cast off, but young cells at the period of their fullest life-energy.

But when the vegetative growth of a luxuriantly growing tree is injured in some way or other, for instance, if a few roots or branches are lopped off roughly, so that it begins to droop somewhat, it then starts to bear fruit.

The control-test is differently manifested in man. As soon as a woman has passed the period of fertility, it almost invariably happens, as with castrated men, that she begins to put on fat.

Practically this principle has long been known as a sort of rivalry between two diverging functions; the sexual and the vegetative growth. Gardeners have taken advantage of this principle from time immemorial. In order to produce flowers instead of leaves, they place their plants in the smallest pots, with an abundance of light and sunshine. The control-test as a proof of this is easy to perform. I once planted, in a flower-bed that lay partly in the shade, some pelargoniums in pots, carefully putting a flat stone under the hole in the bottom of the pot, and raising the rim of the pot a little above the ground, so that the roots could not grow beyond the pot. They all bore plenty of flowers except two which stood in the shade, and these had too many leaves and no flowers at all. When winter came, and I took up the pots, I found that these two had managed to push through and had strong roots in the soil beneath. Only here the symptoms of exhaustion and with them the flower-formation were absent.

Countless examples of this diverging effect might be drawn from horticultural practise; sharp bends made in the stems of branches of fruit trees trained on walls and trellis-work; carrots pulled up by the roots at the end of the first year and transplanted in a sunny spot with plenty of manure, so that they should produce few leaves but plenty of seed; and all transplanting of seedlings with the same object.

When grape vines and fruit trees are pruned, if it is properly done a rich crop of fruit is obtained at the expense of the leaf-formation.

The Japanese gardeners follow the same principle in the production of their dwarf trees; they sow the smallest seeds in the smallest possible pots, the roots are kept very short from the first, the soil as poor and small in quantity as possible, with a minimum of moisture. They thus succeed in growing fruit in a nutshell.

We need not however, go so far as Japan for examples! Who has not noticed, when clearing his garden path of weeds, how between the hard gravel the tiniest plants often grow; real dwarfs, deprived of moisture and nutriment, yet still blooming in the hot sunshine with more flowers than leaves!

Thus we obtain a thorough insight into the contrast between the vegetative and the sexual growth. The different value of these two complementary phases of evolution lies in the difference of their needs and products. That which is good for one often injures the other, and vice versa; on that account the functions are divergent.

Now that we are able to trace the causal nexus of the sexual growth modification, we can go on to enquire which factors favour and which hinder the vegetative or the sexual growth.

This knowledge is of the highest practical importance in the breeding of all animals and the cultivation of all plants. By its means we may possibly succeed in time in human education also in postponing the sexual crisis, that turning point in our lives, for a while, so that first the vegetative, and then the sexual life may flourish and come to perfection.

Of course the majority of living conditions can effect both phases of evolution in a similar way. Therefore the popular idea is not so erroneous, that in general, favorable living conditions will produce both luxuriant growth and a good yield of flowers. This holds good only for moderate influences which are beneficial in every respect; but not for excessive influences which border on the pathological. These may have a one-sided effect.

In this connection KLEBS' experiments with the *hydrodictyon utriculata* are very instructive. This is a unicellular alga, which usually reproduces itself by vegetative cell-division, but occasionally by spore-formation. The intervals between the periods of ordinary cell-division gradually become longer in this alga, until at length swarm-spore-formation gives birth to a new generation, which then begins its reproductive life with renewed rapidity by means of vegetative cell-division.

By improving the conditions of nutriment, KLEBS succeeded experimentally in preventing the lengthening of the periodicity of the vegetative cell-division, and then the swarm-spore-

formation entirely ceased. Vice versa he was able, by rendering the conditions of nutriment unfavorable, i. e. by allowing the fluid in which he cultivated his algae to dry up slowly in the sun, to cause the swarm-spores to appear prematurely.

We recognize here two causes for the premature appearance of the swarm-spores: the gradual deprivation of water, whereby the usual vegetative cell-division would be constantly restricted, and at the same time the strong sunlight, representing a powerful stimulus for further growth-energy, which could not express itself as usual, but only by the casting off of single cells.

It is known of the lichens that in sunshine they reproduce more by spores, and in the sheltered, shady spots more in the vegetative manner by sporidia-formation.

In regard to the higher plants we have already remarked something similar. The tiny weeds in the rough gravel with an insufficiency of food and water, bloom prematurely in the warm sunshine. Trees produce blossoms high up in the air, where it is always more difficult for the sap to rise, but an immensity of light and sunshine reigns.

It has also long been empirically known that in the cultivation of corn, damp weather causes much straw, while a better drainage of the soil increases the yield of grain.

It is quite in agreement with this that in general the wet season is the real developing period of the vegetative growth, and the season of warm sunshine the full flowering time.

In mankind we can study this question thoroughly in all cases of early puberty and of retarded sexual maturity, of which ethnography affords us so many samples. The natives of tropical countries are precocious, although their health is so prejudicially affected by the climate and by social evils, because the stimulus from light and sunshine is maximal; but not those of polar regions, where all influences are unfavorable. Thus a comparatively early awakening of sexuality often occurs amongst the children of the working classes in our big towns, where the living conditions are just as faulty, but where an excess of sexual stimuli is felt.

This conception of the case is confirmed by the general educational experience of all ages, that a reasonably restricted but good nutrition, together with plenty of muscular exercise in the open air, with careful avoidance of artificial sexual

stimuli, exerts the most happy influence in the prevention of precocious sexual maturity. In the simple life of rural districts it has been noted from experience that a retarded sexuality occurs as frequently as precocity in the towns. Now we can understand the great importance of chastity in childhood, on which such great value has always rightly been set.

That in time we shall meet with practical success in this direction seems to me all the more hopeful because I believe that our higher civilization compared with that of the primitive races, can already show some success in the course of the history of evolution.

CONCLUSION.

In concluding we shall endeavor to review the whole history of the evolution of species, but specially now in its dependence on the history of the evolution of the surface of our earth, which after all governs everything that happens to us. It will then be seen that the gradual and complete conversion of the vegetative into the sexual method of reproduction, is ultimately an adaptation to the catastrophes of the earth's surface, which have always governed those influences which we have recognized as decisive.

In the beginning, when the surface of the globe was covered everywhere with a layer of water, there were nothing but water-organisms which only increased their numbers vegetatively, without sexual stimulus or sexual life.

Then later on, when the earth's surface became uneven, with local heaps of organic débris, the mosses which require moisture above everything developed; at that stage vegetative reproduction was still the principal thing, while sexual reproduction remained the exception.

Still later, as here and there large tracts of dry land appeared, still covered which were however with marshes and bogs, the vascular cryptogams evolved, and sexual reproduction began to take a step forward with these. On dry hills and mountains, however, the coniferae grew, which high in the sun and air almost exclusively relied on sexual reproduction.

The majority of our monocotyledons also still prefer a marshy soil, and increase as well by bulbs and rootstalks, as they do sexually by seeds. In the tropics however, the maize,

rice and palms increase in the heat of the sun, just as corn in well manured land does with us, almost exclusively in the sexual way.

Like the latter, most of the dicotyledonous species prefer a loose soil and plenty of sun; they then reproduce mostly, and many of them exclusively, through seeds. Especially in the mountainous regions they revel in an abundance of sunshine, through which the most beautiful and abundant flora develop and delight us.

In the animal world the vegetative form of reproduction was forced to give way much earlier and more completely to the sexual form, because animals possessing the power of locomotion can seek the sunshine for themselves, and their bodies are in various ways exposed to all kinds of local stimuli; whereas the plants, so thoroughly vegetative, are always doomed to lie quietly half buried in the darkness and moisture of the earth. Yet since the earliest times there have existed many varieties of worms and such like which spend all their lives in darkness and water or moisture; and in many of their species the vegetative method of reproduction still rules rather than the sexual.

Fish and amphibia live in the water, but spawn in the sunshine. The warm-blooded animals come higher in the scale with their increased oxidation and their increased sexuality.

But still all the higher species of plants and animals in which the sexual life has triumphed, always begin by passing through an asexual period of life in non-irritating moisture and deep darkness; their nuptial flight however takes place on a fine day in the height of summer or in a midsummer night's dream.

41. The Evolution of the Parts of the Brain and the Sexual Organs from equivalent Segments.

The previous chapter took us back to a primeval period which we can scarcely now conceive, the long forgotten period when sexual life first dawned. Countless species of animals and plants have evolved since that far off time, and countless species have died out in the course of the ages. At last the vertebrate animals were produced and in them the intellect has developed to an astonishing degree; a dangerous competitor for the sexual life.!

Because these two systems are so diametrically opposed and have such an enormous influence on each other, we shall devote a special chapter to their mutual relations.

For most of us, when we study the doctrine of evolution, the pleasing moral of the story is briefly this: mankind stands in the highest rank*, and it is by means of our higher mental development that we have accomplished so much on earth, and each of us can accomplish so much in the world, if only the sexual system does not rob him of his reason and ruin him.

In this chapter we shall inquire if this comparative evaluation of the two chief factors of our life is really correct, and if it is not rather the fact that our mental life and our sexual life are the two central points of our existence, both equally important for our happiness and both of equal value for our evolution, only they must maintain equilibrium between themselves.

Of course when we speak of the evolution of species, we must give to the higher development of our brain the honor that is due to it. By this sign we have conquered! And so we have become the "homo sapiens". After all evolution is first and foremost a question of heredity, so it is certainly quite evident, that the higher development of our sexual

* Man only stands high in the scale of evolution when a refined differentiation is chosen as criterion; we certainly stand high with our increased capacity for feeling happiness. But on the other hand, as soon as primitive simplicity, brute force, and elementary power of resistance are taken as the criterion, then we stand very low with our equally increased capacity for suffering pain.

functions is a no less important factor of our evolution; and who knows what may not be accomplished in the future by the ennobling of this function! In the struggle for existence we have won through mostly by the antagonistic and alternating effects of the development of the brain and the development of sex, and we hope that this will continue to play an increasingly important part.

In the succeeding generations of the species the functions of the brain and of the sexual organs have not only developed in their numerous aspects, but they have always supported and stimulated each other more and more thoroughly. The two functions reach the apex of their development in every individual at the same age. The more beautifully the one forms, the finer will be the development of the other. We have all been struck more than once with the simultaneous occurrence of unimportance in the one with unimportance in the other respect; and the association of inspiration in the one respect with inspiration in the other. Numbers of celebrated men and women might be mentioned in this connection. So with regard to Saint Augustine it cannot be denied that the ardor of his religious belief and his African sexual temperament represent the two opposite sides of his character* and cannot be considered apart!

We cannot but be amazed at the extraordinary sensitiveness of our brain cells, which are so specialised for sensibility; but we must be equally astonished at the extraordinary plasticity of the reproductive cells, which can give rise to an entirely new individual. On the one side cells of a creative genius, and on the other, cells that can really give rise to another generation.

Still better shall we be able to weigh the values of the two great powers of our existence, if we first see what evolution has to teach us in this respect, so that we get some insight into the manner in which the two poles of our body have so widely differentiated, with mutual division of labor.

In the foregoing chapter we studied the history of *sexual*

* It was just on this account that he was able to combine the belief in a personal God that he had inherited from his mother, with the abstract and therefore absolute idealism of Plato; as he himself confesses the study of Plato was the first step towards his conversion.

evolution of *vegetative* growth, how it has gradually modified its type under the influence of the sexual.

As soon as the organisms became multicellular (see page 247) the segment-type capable of unlimited extension became the ruling type, as in the thread-algae, and the mould filaments; a type which still prevails in the plant world. For growth proceeds in a straight line in the higher plants too, upwards towards the sun (heliotropism) and downwards towards the earth (geotropism; internode succeeds-internode (see page 51) — and so on, until a certain limit of growth is reached and a flower-bud closes the series*, through which a new generation will be introduced.

So each individual vegetable cell to a certain extent maintains its autonomy; they are all surrounded by the outer air, so that the plants can more or less harden not only their outer surface, bark or skin, but each single cell-wall as well.

In the evolution of animals also we often find in the lower orders, for instance in the worms, such a type of growth in segments which follow each other in endless succession. This is exemplified in the tapeworm, in which the vegetative form of reproduction plays an important part side by side with the sexual form. The more such organisms develop, the more numerous are the numbers of segments.

Only when the sexual mode of reproduction had assumed a monopoly in the animal world, so that every individual without exception must develop as an embryo in egg-envelopes as in a closely-fitting capsule, did the type of further growth become entirely different. Embryonic development henceforward comes so much to the fore** that this rounded form of the body, which in plants only occurs in the seeds as a temporary stage, remains in these higher animals the normal type of vegetative growth. Instead of the type of

* The essential character in flower-buds is the occurrence of single cells, and in leaf-buds that of side-leaves which then strike their vascular bundles sideways in the twig (see page 232) and thus form a level of demarcation as a boundary between the old and the new stem-section, by means of which the whole twig is gradually divided into internodes.

** In these higher species of animals, a pair of embryonic organs which have remained in a rudimentary condition are chosen as the starting point for the sexual new-formation of single cells. (see chapter 3).

growth that constantly continues in a straight line, the embryonic type assumes a compact form of growth in a circle.

Here it can no longer be a question of geotropism and heliotropism. The inner cells of the tissues in this organization only come indirectly into contact with the external air through the circulation of the blood, which renders hard cell-walls unnecessary; for from now forward the collective egg-envelopes form the single solid envelope, as for instance in the leather-like outer skin of the adult body. So here, in contrast to the plant world there develops an independent entity, of rounded form and complete in itself, with a central organization and central direction. This entity may reasonably be termed an "individual".

On account of the compact form of their bodies, these higher animals can only draw their nutriment from the finest and most highly organized materials, and especially from the higher species of plants with their predominating process of reduction; and hence conversely in the higher animals, oxidation is the process employed to complete the production of calories (energy). Thus a perfect antithesis is developed; on the one side vegetable metabolism with acid fluids, and on the other animal metabolism with alkaline body-fluids.

Only the sexual life remains unchanged in its essential principles. Pollination and fertilisation are almost identical; each of them merely a transfer of single cells, characteristic of the sexual life from the first. The vegetative growth however, has undergone a complete metamorphosis under this sexual influence; it has been forced to adapt itself to the sexual.

And so the whole history of evolution has gradually come to symbolically represent an apotheosis of the god Cupid. The little rascal who at first only gave his aid exceptionally, has wormed his way in more and more, and was not content until he had modelled vegetative growth after his symbol the egg, and had led us humans all to join the band of his avowed admirers. And he likes to play the mischief with us all individually even now.

This change in evolution did not happen all at once, but was only gradually effected, and we can always perceive (on Haeckel's principle) a trace of the early segmental formation, though it becomes ever less noticeable in the higher animals. We can thoroughly comprehend the structure of our own bodies only when we examine them in this connection.

Just as the body of a plant is really constructed of many segments formed together, so we still observe in all the higher classes of animals some slight indication of segmentation, as if the higher animal-body were indeed a sort of colony* consisting of a chain of lesser organisms. This segmental formation in larvae, caterpillars, millipedes, and other insects which possess annexed skeleton, is most evident in the skeleton itself in all vertebrate animals, on the contrary, in their internal skeleton, and also in man, this is expressed in the segmentation of the spinal column. Lines of demarcation occur in the spinal column, as boundaries between the different vertebrae, something like the line of demarcation that forms in plants between the stem and the bud, as we have already said in the footnote.

In the individual segments in plants, and also in the separate joints in the tape-worm, each section still claims a certain autonomy for itself, so extensive that under favorable conditions each can continue a separate existence; in the tape worm each segment has even its own sexual system. The co-operation of the whole organism, however, is in these cases inconsiderable.

In the millipedes and in some of the caterpillars each segment, with the exception of the head- and tail-segments, which are strongly differentiated, possesses its own nervous system and its own breathing tubes, and two feet; yet a separate existence of the individual segment is no longer possible. Here however, the co-operation of the various segments is far better provided for.

In the vertebrate animals, the nervous system, the organs of respiration and especially the circulation of the blood are entirely centralised. Yet man still possesses two fully formed segments which carry extremities, i. e. the pelvic ring with two legs, and the shoulder ring with two arms. The remainder of our vertebrae carry two ribs or at least two lateral processes, but they no longer have extremities.

The degree of diminution of the traces of the older method of vegetative segmental growth during the course of evolution, is best seen from the fact that the higher we mount in the

* We might imagine each segment as a small colony of cells, and each individual as a colony of segments; both kinds of colony with extensive division of labor. Embryology teaches us however the unitary origin of the individual.

scale of evolution, the smaller the number of segments becomes. The number of segments in a plant or a tape worm is unlimited. In a millipede or caterpillar the number of the fully-formed segments is already limited, but there are still many, all with legs. Higher in the scale we find in the crustaceae (shrimps and crabs) only five pair of legs, in spiders four, and in other insects only three. In the vertebrate animals including man, only two pairs of extremities have persisted.

In the course of individual evolution we find the same tendency, for the perfectly developed insects have a much smaller number of segments than the larva or caterpillar from which they have sprung. We shall see a little later how wonderfully this same principle is expressed in our own embryonic development, but first we shall trace the development of the human embryo from the commencement.

Our individual development in egg-form is really very simple. The initial point of our growth is a spot in the periphery* which in the adult still occupies the centre of gravity of the body. Starting at this point the primitive cell-layers of the embryo, the ectoderm and endoderm, extend in all directions around the egg-wall, until they have ultimately formed the umbilicus or navel. Our beautiful rounded body** at last becomes closed, in this way. In this respect it is remarkable that the energy of growth of the fertilised egg-cell, which was at first so tremendous, gradually diminishes and finally, partly from lack of room, it becomes almost nil. This is readily evidenced by the median line of our bodily envelope, which becomes constantly thinner.

To acquire the egg-form in length was a more difficult problem. In the mesoderm the process of segmentation begins early in the region of the future vertebral column*.

* The germ bulges in the direction in which the ovum can freely develop, and hence the placenta develops at the spot where the ovum is embedded in the maternal mucous membrane.

** The ovum is at first spherical but later becomes ovoid in the uterine cavity. This is due to the equal pressure exerted firstly by the internal fluids and then by the "waters" in which the foetus floats.

*** In the plants not only the main trunk but also the branches form in segments; so in man not only is the spinal column vertebrate, but also the long bones of the extremities are segmental, and like the vertebrae move on each other by means of joints.

On account of the shape of the egg this series of vertebrae, the spinal column, shows at both poles of the body, a remarkable curve noticeable in man in the skull and the coccyx; this is more remarkable in view of the way the head is bent forward during embryonic life.

At these two terminal curves the segments seem to be formally pressed upon each other, and the nearer the end, the more this is the case. This is technically termed "telescoping". Fortunately this causes the disappearance only of the least important tissue — the osseous tissue. In the head, the nervous system, connected with the organs of the senses, is best preserved, and goes on increasing. On this depends the mental superiority of the higher species.

But the possibility of unlimited growth in length and of the branch- and bud-formation entirely disappears in this ordering of the animal body. Indeed when the sexual stage approaches, no new buds can be formed as in the plants, which should rapidly fall apart into single cells: at most a pair of old rudimentary organs may protrude a little and then break up into individual cells.

Evolution has not been more fortunate in the visceral organs, that is to say in the whole series of glandular secretory organs, than in the osseous system. Only in the central portion of the body, the liver and pancreas can develop quite freely into real glands. But in the upper and lower portions of the body, the glands are almost all misformed. In the upper pole of the body, in the telescoped curve, there develop the thyroid, pineal, thymus and pituitary so-called glands, which, instead of becoming real glands as their histological structure would lead us to suppose, only develop into rudimentary monstrosities. At the lower pole of the body, the embryonic reproductive organs and the primordial kidney break down and combine in man into a conglomerate body: the testis. Nor does the ovary become a real gland, although histologically it displays a distinct adenoid tendency. Only in a later embryonic period, when there is a little more room available, in both sexes after the primordial kidney has disappeared, a pair of real glands, our permanent kidneys are formed; the two suprarenal capsules however, are not so fortunate. Nearer the two poles of the body, no other rudimentary remainders can be traced.

Finally the following little detail, which we have so far hardly been able to appreciate, serves to illustrate this development in the form of an egg, with limitation of the number of segments. As we have already seen, only two pairs of extremities have persisted in vertebrates each of which is composed of two symmetrical halves, and comparative anatomy has recognized in this a possible union of two lost extremities. Especially in man, two tiny arms can very distinctly be recognized in the two halves of our lower jaw, with the same type of joint as our shoulder joint, and equally mobile; with the same angle as our elbow, an angle which becomes more acute as the years pass by; even with a reminder of the space between the ulna and radius, affording a passage for the nerve-trunk and the most important blood-vessels. It is just as though these two small fore-arms, through constantly serving to bring food to the mouth, had at last become telescoped to form part of the buccal organ; just as in the millipedes, crustaceae, in spiders and other insects, the mandibles may be regarded as only modified legs.

So in our embryonic life, according to the principle of *Haeckel* we pass through not only a reminiscence of the primary type of growth in separate segments, as it still occurs much more completely in worms, but also the reminiscence of an unknown intermediate type with three pairs of perfect segments, a type that has reached its highest perfection in the insect-world; and finally the long-persisting indication of gills (in the embryo) is a reminiscence of the fish-stage of our evolution.

Now that we are acquainted with the telescopic principle in evolution as an expression of our formation in the shape of an egg, it will certainly be less difficult for us to attach their proper relative value to the two poles of our body.

These two poles underwent differentiation in divergent, even in opposite, directions in the multicellular animals of elongated shape. This occurred perforce from the beginning, the earth's surface became more evenly covered with water, and all organisms were still aquatic. For in consideration of the direction in which they swam, the hinder portion of their bodies naturally became the secretory pole, while the tail was one of the most important of the organs, like the rudder of a ship. At that period the hinder pole was

at least as important as the anterior one, where the entrance of the alimentary canal was situated, and where on account of the constant search for the right pass for nourishment, the organs of the senses were obliged to develop. But this primitive difference was not the only one.

Let us therefore consider as the end-point of development our own skeleton, and firstly the hindermost portion of it. Here as an expression of the telescoping with a forward curve (in harmony with the oval form), it strikes us at once that several vertebrae, which could be distinctly recognized during embryonic life as separate spinal joints, have grown together and shortened in the adult, and form the massive sacrum, while for the rest of the vertebrae nothing remains except a rather useless coccyx, which resembles a rudimentary tail*.

Here in the concavity of the embryo as it lay rolled up in the mother-egg, the two reproductive organs developed, and here the newly-formed urogenital system acquired its present form. Afterwards when the pelvis has grown up as a bony framework the mature ovum can safely lie sheltered in the maternal body until it reaches full development.

In contrast to the head, which represents a cavity surrounded by bone, and to the thorax with its bony grating, the frontal wall of the abdomen, as the last wall of the body to be closed, has remained free from ossification. So this is the most suitable spot for adaptation to the bowel contents and for changes of blood-pressure, which latter reaches its highest point in the sexual congestion of the blood-vessels. And just because the impulsive variations in blood-pressure are the expression of our varied moods, this free play of our blood-pressure is of particular importance. In former times when one was of a melancholy and morose disposition, this state was termed hypochondria, because not without reason it was thought that this painful condition was localised beneath the cartilages of the ribs.

* When the tail was no longer required as the ship's rudder, this organ comprised of so many vertebrae, developed differently in the different groups of animals; the beaver employs it in his building operations, the horse and ox drive off the flies with it; there are species of rats which use it to carry their young, in the kangaroo it serves for jumping, and in birds it is the aviator's rudder.

On the other hand the amount of nerve substance in this portion of the body is inferior to that at the upper pole, for in the abdomen there are only a few small scattered collections of nerve centres.

Fortunately we still have nerve centres which are not enclosed. Together these form the sympathetic nervous system, which transmits only vague, but so much the more intimate sensations without further localisation and further intervention of the consciousness. So here the sexual life develops as an indefinable but powerful sensory excitement, that can only be disturbed by the interference of the intellect, an antagonism which is thoroughly characteristic of the sexual passion.

Fortunately the process of the telescoping and bending forward did not go any farther at this lower pole, or the act of parturition would have been rendered impossible; but still it is often so difficult, that some of the finest developed children cannot be brought into the world alive, and many a young mother is sent to an early grave. Thus here the limit of possibility has been reached.

Let us now turn to the other pole of our body. In embryonic life we have noticed the fish-gill stage, which should really be called the segmented stage, for there is no trace of gills in it; only in this stage a series of folds or clefts may be observed in the concavity of the excessive telescoping. This may be observed at the same spot where in fishes the gills protrude, because in them the cleft often persists at an adult period.

The twelve pairs of nerve trunks which we call cranial nerves, ought properly to be regarded as spinal nerves, for twelve vertebrae seem to have telescoped during the course of evolution and to have fused together with great loss of bony substance. But, because the sense organs had meanwhile developed in constantly greater perfection, there had ensued the collection of a great quantity of nerve substance in a compact mass. Only a portion of the spinal marrow is still to be found within the skull, and so little deformed that it is called the "medulla oblongata" (prolonged spinal marrow).

What an immense contrast we have here to the other pole of the body! Here everything crammed with nerve-substance, and there room for the free play of the circulation.

And this vaulting over of the brain in the vertebrate animals* in more striking the higher they mount in the scale; in man for instance it is so strongly developed that the brain actually protrudes over the features of the face. As a result man and the anthropoid apes were robbed of their last means of escape: they could no longer save themselves from an imminent danger by swimming, because with their heavy heads their breathing organs sank too deeply beneath the surface. So they began to scramble with all four extremities up trees whenever flight was necessary; and this led to a complete change of attitude and form of body.

With this development of the brain the limit of possibility of existence is almost reached at this pole also, for what a great number of individuals are drowned every year! And yet with the increase of civilization and mental effort the high vaulting of the skull has constantly increased, as we shall observe if we compare ourselves with the prognathous type seen in primitive races. Yes indeed, our skull is filled with nerve substance to such an extent that here, in contrast to the other pole, is scarcely any room for the circulation of the blood, so that mental strain soon leads to head-ache. The difficulty of circulation in this organ causes endless suffering, and the slightest effusion of blood in the brain may lead to an apoplexy from which so many people, especially educated ones, perish.

So we see that at both poles of our body, the evolution described above has almost overstepped the limits of possibility of life, and it is not surprising that we men stand at the terminal point of evolution. Our further evolution lies therefore far more in a certain refinement, for which much moderation and self-control are needful. Civilization, an artificial degree of domestication, now holds the mastery over the crude forces of nature. And instead of developing constantly more highly

* In most of the other animal species we also find an avoid rounding of both poles of the body. It is very pronounced for instance in the crabs and shrimps, but these in contrast to ourselves have the greater bend at the anal extremity and so this group of animals has not made much progress in the world; we know the wood-louse and the Balanus to be stunted descendants of the crab, which was always so well armed for offence and defence.

differentiated organs in our bodies, we are always inventing more highly differentiated tools, machines and implements.

Now that we have reached this high stage of civilization, it is more than ever necessary that the two guiding motives in our lives should keep each other in equilibrium.

Too great attention to one pole is just as dangerous as too great attention to the other. The hygienic and ethical dangers of sexual excess are generally recognized; but a one-sided mental development causes in addition to the hygienic dangers a predominating ethical danger, the danger of a one-sided intellectualism*, and to this the more highly developed individuals are the most subject.

Our brain certainly makes us reasonable and cautious, but we only feel happy when an increased circulation powerfully stimulates our whole metabolism and especially our oxidation, which goes on so actively under the stimulation of the sexual life. The functions of our brain teach us, how we can even in the most complicated cases avoid danger and seek favorable conditions; but the sexual life fills us indeed with happiness and delight. And how much more inspiring and successful would many an intellectual work, many a sermon or lecture, many a legal judgement be, if not less cold reason, but warmer feeling were put into it.

* At first, before man had become so preponderatingly intellectual, the seat of life was not thought to be the brain, but rather in the breath, (Genesis II:) or in the blood. (Genesis IX : 4).

42. The Evolution of Sexual Feeling.

There probably exists no substance which chemically and physically is so sensitive as living albumen which, biologically considered, is by far the most important constituent of the living cell. In chapter 34 we have already seen how even in the lowest organisms, the contractibility of albumen and the consequent mobility indicate an almost incredible sensitiveness of the albumen to external influences. But in the higher organisms far keener sensitiveness is displayed by those groups of cells in the interior of the body which as nerve centres are exclusively differentiated for sensation.

These nerve centres are not only impressions sensitive to which arrive from the outer world, as in the case in all unorganized bodies, but in the higher animals, probably because their bodies are so complicated, they respond also to the impressions from within.

These mysterious internal impressions, which cause feelings of pleasure and pain, have in human beings been elaborated to form a detailed consciousness.

Especially through the intervention of those nerve fibres which function internally as sensory nerves, all the sensory impressions of our internal organs are transmitted to our central nervous system, so that in general we feel happy or miserable, according as our various internal organs, such as lungs, heart, intestines and muscular system, work correctly and vigorously or not.

But as we have already pointed out, at the same time another stream of impressions from the outer world is constantly being received at the surface of our skin, and transmitted through our nerves to our central nervous system; indeed some spots have become particularly sensitive to such impressions, especially some small areas of skin in that part of the body which in swimming is in front. For instance if a small area of the skin were covered with a black pigment, which would protect the subjacent tissues from the irritation of light-rays, then a local sensibility to the light stimulus would be developed, which would be felt every time that this darkened area of the skin was drawn a little back and forth

over its substratum; and thus in the evolution of species there has been formed from the skin not only mobile eyelids, but also an adaptable lens in connection with a moist capsule* and a highly vascular retina, which is extremely sensitive to light.

Where the skin was depressed, as in the gill-clefts, and where sound-waves coming from a certain direction could thus penetrate, a special sensitiveness for sound-waves was developed. At the entrance to the air passages and the alimentary tube, the sense of taste and smell developed. And all these sensory organs have proved such indispensable weapons in the struggle for existence, that in the process of selection they have constantly been perfected.

Yet each of these special sensory organs is in its own way only a special¹ modification of the primordial general sensibility of the skin, so that if one of these sensory organs is lost the others are highly capable of compensating for the loss.

Thus the senses of hearing and touch become very highly developed in the blind; when the latter approach a wall they feel its presence by the restricted movement of the currents of air around them and in the varying echo of their footsteps, soon enough to avoid a collision. When the sun shines we are charmed by the brightness of the light and the colours which we see reflected from every object, but the blind man is equally charmed by the warmth of the sun's rays; and we know that light rays and heat rays are nearly related.

He who loses his sense of smell soon learns through the sensitiveness of the tongue to judge the taste of foods as well as before. All these things are only modifications of the common sensibility of the skin.

The common sensibility of the skin retains its primary importance as long as we live; as we perceive easily in the magic effect of water- air- and sun-baths, massage, etc. (see chapter 55) by means of which we feel our youth renewed. We only enter into relation with the outer world around us through this

* In the same way in small portions of the skin which are frequently in movement, such as the finger-joints, the knee-joint, etc., there often forms a lens-shaped bony body with an encapsulated mucous pouch beneath. Fortunately the lens of the eye remains transparent till old age (cataract).

sensibility of the skin, but it is through the local elaborations of our so-called sensory organs, that the number of our impressions is infinitely increased, while our mental development keeps pace with them and enhances its value.

So we like all these impressions from the outerworld very much; especially if they are endowed with movement, and above all the stimulating touch of our fellow beings, in so far as we find them sympathetic. Thus there arises in us the longing for companionship, friendship and love.

In the evolution of the species mutual approach and mutual contact first assumed importance in the warm blooded animals, on account of both the range of variability of temperature and the variety of the massage motives. The mutual approach is henceforward felt to be a permanent delight, and thus the sexual impulse of these species has developed into the love life.

In the higher species this love life assumes a form that is constantly more comprehensive and manifold, with the constant addition of more spiritual motives full of joy and charm, until finally in man love becomes something so spiritual that the material impulse not infrequently recedes entirely into the background. Also if we carefully observe our individual development from childhood to manhood, we can trace the same process of evolution, and can still distinctly perceive how greatly the sexual feeling is really only a special development of the sensibility of the skin.

The passionate feelings which we adults commonly experience almost exclusively in the sexual sensations, express themselves in children just as intensely, long before puberty, as a general sensibility of the skin.

The smallest child likes being tickled and caressed, on any part of the body, and soon forms sympathies or antipathies in consequence. Young children play as heedlessly together as kittens or puppies; they roll over each other and tease each other; sometimes they will put up with anything from each other and sometimes the contrary. Bigger children wrestle and fight fiercely as though their lives depended upon it. Thus manhood approaches.

Gradually through force of habit all parts of the skin have become insensitive or less sensitive to this local contact, but

some of the more intimate parts of the skin still remain sensitive, because they are more concealed, and so far have been more protected on account of the proprieties, so that they preserved the whole of their original sensibility. We now come to a critical point in our lives; the awakening of our sexual impulse. Prototypes of these very sensitive parts of our bodies, are all those portions of the skin which are constantly sheltered from all rough handling by clothing, such as the neck, the armpits and the soles of the feet, but especially the regions where our urinary and sexual canals terminate.

These portions of skin were predestined to be the foci of all contraction impulses as soon as the sexual impulse should be awakened.

So here too, we are dealing primarily with a skin-sensibility. For, to be exact, it is not the erectile tissue that is so sensitive, but those portions of the skin that are alternately congested and depleted through the ebb and flow of the blood in the erectile tissue. From the period of puberty onwards this sensibility is appreciably increased through the stimulating effect of the sexual organo-chemical substances to which we have frequently alluded.

Thus one might well say that we have a sixth sensory organ*, for here also we have an increased local sensibility of the skin combined with a complicated special apparatus. Only with this difference: in other sensory organs the normal stimulus comes from without, and only the abnormal from within; while in the sexual apparatus the normal stimulus comes from within and the artificial stimulation from without. We are here at the excretory pole of the body.

In the prime of our life we are often so governed by our sexual impulse, that for the time being all other emotional impulses are obliterated. But because the sexual sense is only a partial manifestation of the general sensibility of the skin, the need of sexual contact still remains a special case of the general impulse to individual contraction. Sexual abstinence may certainly be a great misery, but one feels much more unhappy if one fails to find satisfaction even of the

* If we define the sensory organs as local refinements of the general sensibility of the skin, the latter itself ought not to be included with them.

primary longing for companionship and affection*. How many men who have been living for years in rooms, alone, without family connections and home comforts, have drifted at last into the torrent of vice, not because their sexual impulse was so overpowering, but simply because the feeling of loneliness and neglect became at last intolerable. One also realizes why solitary confinement drives men mad, and why masturbation is so degrading.

We can now understand too, just as we saw in the compensation of some of the lost sense-organs by other organs, to what a great extent sexual affection and general affection can replace each other, and this point is of practical importance. Lovers feel for the time being absolutely no need of the affection of the outer world; they are happiest when alone with each other, and intoxicated with sexual delight. But when we are inconsolable for the loss of a loved one, a husband or wife, words are useless, only a silent grip of the hand, or a gentle embrace can bring us with the warm tears of sympathy a measure of consolation. And even if one is almost demented from the effects of sexual abstinence or the loss of one's partner, the gentle touch of loving hands and companionship by day and night always gives the most relief.

For we should not lose sight of the fact that even in the prime of our lives the sexual impulse only takes possession of us for a moment; there is an ebb and flow. Even during the honeymoon the actual connection forms only a small fraction of all the caresses which then render us so happy. The general need of affection is far more fundamental; only this need is felt by some people much more keenly than by others, and finds its expression in one more by bodily contact and in another by psychic sympathy. And when with advancing years, sexuality itself fades, the need for affection is by no means extinguished, but is often only felt more strongly. When we are ill or perhaps on our death-bed it assumes its greatest importance, and is our only consolation.

So it is a fundamental error, though one very commonly

* This is not invalidated by the fact that we may sometimes long for rest and solitude; on the contrary these two needs are complementary; for biologically periods of rest and manifestations of maximal energy must be complementary.

made, to try to trace a sexual element in every case of affection.

In our relation with the other sex, the sexual factor often plays only a secondary part. Sometimes even the difference of sex directly restrains expressions of further affection; although in this case the danger itself may possess a special charm. In reality it is wholly and solely our own exaggerated sexuality, which leads us to assume a sexual basis and to fail to recognize the non-sexual.

Through this erroneous idea a natural friendship between two young people of opposite sex may often be grossly misunderstood and the purest and finest feelings wilfully stifled. In this way a sort of crude and animal sexuality is constantly encouraged, as though the satisfying of the sexual passions was the final object of all affection; although in love there exist a hundred no less intimate and passionate ways of showing affection.

The tender attachment of childhood, the romantic idealism of adolescence, the vows of eternal friendship in early manhood, are no less true and sincere than the sexual life that occurs later on; the first kiss is sometimes no less passionate than the first conjugal connection; the time of engagement is quite as sweet as the subsequent married life.

And yet in the most prosaic conjugal life, the sharing of all joys and sorrows may cause both partners in the course of time to feel united by sacred bonds of mutual devotion; and this found symbolic expression centuries ago in the sacramental marriage under the blessing of the church.

In all religions we find this innate connection of the religious with the sexual feelings, the two primitive and typically impulsive manifestations of our psychic life; human love and heavenly love. In the different epochs of history however, this connection has been manifested in very different ways; in paganism often frankly sensually; in the Middle Ages mystically, and nowadays more idealistically. And the more religion develops as the cult of the higher ideals which slumber in every human breast, the more manifest will be the union between these higher aspirations and sexual love.

significance besides the symbolical one, for in these species, the genital organs lie near their heads! And they can make love to each other half the day without making a sound, revelling the whole time in double ecstasy. For them there is no question as to which is the more blessed, to give or to receive, for they both do both at once!

And yet it is far more romantic, if less Arcadian, when the division of the sexes compels each partner to seek a mate of the opposite sex. And how much more has variety in the love life occurred since that time! In the plants it is still unconscious, in the lower animals only half-conscious, and the higher we mount in the scale of animal evolution the more conscious it becomes.

But a very long time elapsed before the slightest trace of tenderness was perceptible in the sexual relations.

At first copulation signified only the voluntary expulsion of the reproductive cells with the mutual help of the other partner, an evacuation, when the tension had become too great; nothing but a purely excretory function. A little while after fertilisation, the female laid the fertilized eggs in a quiet, sunny, safe place, where she would not be disturbed during this lonely excretory function, and did not trouble any further about them*. And these eggs hatched out in due time by the sun in a spot as sheltered and as safe, as if the place had been chosen with motherly foresight for the well-being of the new brood.

It is scarcely possible to observe parents caring for their offspring earlier in the evolutionary scale than the vertebrates. Even in some fishes there is already evidence of paternal care in the building and guarding of nests. Some reptiles cover their eggs with moss and leaves; some of the snakes coil themselves up over their heap of eggs as if to protect them; mother-crocodiles sometimes carry their young about with them.

Nor is there in the lower species any trace of enduring friendship or lasting love between the two parents; they

* The watchful care bestowed on the larvae and nymphae amongst the bees and ants does not come from the mothers, but from the sexually unfit female relatives, that is to say, mostly from the maiden aunts. And in many varieties of ants, it is the female slaves stolen from the nests of other varieties who are charged with this duty.

separate after copulation and trouble about each other no further. Frogs and most fishes do not even have any internal mode of copulation, but both sexes simply shed their sexual product into water. But they perform their excretory function in communistic voluptuousness; the fishes by swimming close together in shoals, the frogs very pedantically by assuming the traditional attitude of a pairing couple, but really like the fish with external massage only.

Thus the reproductive cells are simply shed into water by both sexes, generally in a sheltered and sunny spot, where the reproductive process may proceed undisturbed and unlimited.

A few of the water-toads stay together from the time of copulation until the laying of the eggs; and the male of the Surinam toad (*pipa Americana*), assists the female to lay her eggs.

But it is only in warm-blooded animals* that we find really affectionate care bestowed on the young, of sitting on the eggs or warming the young that have been born alive; parents often living together and affording each other mutual help, especially in the birds. The tender affection that a pair of birds will show for each other, and the care that they take first of the eggs and then of their young might put many a human couple to shame. In mammals it is mostly the mother which does everything for her young ones, and must even sometimes shield them from the brutality of their father, but sometimes it is the father that protects the whole family.

Thus we see here two new important factors coming into operation at the same time in the history of evolution: a higher development of the sexual life and the occurrence of warm-bloodedness. We may now enquire whether there is any connection between these two factors. I am of opinion that an interchange of cause and effect cannot be denied.

In the course of evolution so long as the excretion of reproductive cells, mating and laying eggs were comparatively simple matters, the parents needed but little mutual help: and because this most powerful and intimate stimulus of life-

* All living cells produce heat by chemical processes; but in plants and cold-blooded animals the sum of this heat is so small, that the temperature of the organism is hardly distinguishable from that of the surrounding medium.

energy was lacking, the increased oxidation it would have caused was also lacking and the animals remained cold-blooded.

Warm-bloodedness must *vice versa* stimulate sexuality. We have already seen (chapter 32) that increase of temperature is a most effective sexual stimulant, and in chapter 29 that in the procreative act the mutual warmth of the parents plays an essential part. But mutual warmth is found agreeable in other circumstances also, not only as a protection against chill, but also as a reminiscence of former mating and a foretaste of the next, and so altruistic. And the protective warmth of the parents' bodies is indeed indispensable for the young brood.

Let us first try thoroughly to realize what is the position of a warm-blooded organism. Warm-blooded means that the organism has a temperature considerably higher than its surroundings and so is always in danger of losing its body-heat. Against this a warm skin-covering or nest can only provide a relative protection, i. e. a postponement of the cooling. In the life of wild animals, and also that of men up to the time of the discovery of fire, the mutual warmth of bodies in contact was the only regular and permanent source of heat, whenever the animal could not maintain the usual and necessary heat through its own resources; the ingestion of food and the oxidation in the lungs; e. g. during the night, and in the winter-time. So then the companionship of the parents among warm-blooded creatures grew to be a lasting delight, which indeed attained its height in the procreative act, but was still at all times an emotional delight. The procreative act is now the climax of emotion. Thus the sexual impulse has been directed into emotional paths.

44. From a brief rutting period to a permanent sexual life.

When in the course of evolution the sexual form of reproduction appeared as the latest novelty, it was certainly at first quite an exceptional phenomenon, such as very primitive organisms even now only occasionally display. And even later, amongst the more highly organised creatures, the sexual life does not function in a continuous manner; the majority of phanerogamous plants bloom only once in their lives, others only once a year, and many animal species mate only once in their life; most of them only once or twice a year. That is the period of their greatest development of energy; many species of insects only get their wings at that time, many birds then display their brightest colors, it is then that we hear in their music, their song of joy in the intoxication of passion.

Even the highest species of animals are then so dazzled by this passion and tire themselves out so thoroughly that in a very short time they are quite exhausted. Many males die off as soon as the reproductive duty of their lives has been accomplished; and in any case after this extreme exhaustion a considerable time elapses before the males have regained their usual strength, and before the females have recovered from egg-laying or bearing and suckling their young. So it is easily comprehensible why in the case of most animal species such long rest-periods are necessary, and sexual excitement and activity manifest themselves in a new rutting period only after a considerable interval. Then the sexual life emerges with overwhelming force, but does not last long, and the whole species sinks into sexual apathy once more.

In domesticated animals, i. e. those living in a tame condition, whose impulsive reflexes has been inhibited for ages, we observe a quite different picture. Here there is no such violent sexual crisis nor such exhaustion, but the act occurs much more frequently. When the females of our domestic animals are on heat and a single coitus does not bring about the desired result, phenomena analogous to menstruation may be observed periodically every 3 or 4 weeks, until, as a con-

sequence of repeated copulation, pregnancy occurs. We observe the same menstrual phenomena regularly in the anthropoid apes, the gorilla, chimpanzee and orang-outang, in the zoological gardens.

So it is not surprising that in human beings with our milder manner of living and regular customs, and a certain amount of self-control, our women-folk show the same menstrual type.* And their capacity for pregnancy and their sexual desire are normally constantly present, even if less evident in the middle of the intermenstrual period.

As a reminiscence of the oestrus or heat period, many women even now only feel desire during their menstruation; which was of old their time for intercourse and increased fertility. It is quite probable that later, when such excessive fecundity was no longer required of her, the observation of this temporarily increased fecundity was the reason for connection during these few days being so categorically forbidden. This ban is certainly a traditional custom passed into a religious duty.

The same story of evolution, this shortening of the interval, is almost more manifest in man than in woman; and its the more striking because amongst animals the male is the more aggressive and impulsive in his wooing. While they live in the wild state this is only true of them at the rutting period; otherwise they are impotent and sexually apathetic. Our domesticated animals however, such as the stallion and the house-dog, are "always libidinous and ready to cover" as Professor EUGEN FISCHER says briefly and pithily in the "*Zeitschrift für Sexual-Wissenschaft*", April 1921. So in human beings the frequency of the sexual act may be very high at all times, sexual excitability is almost constantly present. Yet only man has learnt that he can control himself without outside compulsion, and when required can either live in abstinence or be sexually active.

Man appears, however, to have reached this highest stage of sexual evolution only relatively late, so that we are still able

* In the course of my practice I have occasionally found a married woman express great surprise when I enquired about her periods; she looked at me, and replied: "No, not since I was married!" She had been perpetually either pregnant or suckling a child.

to observe in historic times a reminiscence of the more primitive period. Amongst the most primitive savage races, and also amongst ourselves in some isolated districts many reminiscences may still be found of the folk-festivals of earlier times in which, amongst the members of certain groups or tribes a sort of promiscuity (freedom of sexual intercourse between all the parties) was the custom, as though it was a fixed law of nature, intimately connected with the original social organization of group-life. Because these public festivities took place from time immemorial at certain seasons of the year, they also indicate a sort of official rutting period for human sexual intercourse in the primitive epochs, at certain seasons. In some parts of the world the nature-festival was held in spring or early summer, when the whole of nature awakens to renewed life; in other places, however, in autumn with its abundance of food and drink. Frequently these fairs were met with in both seasons.

Thus we see the rutting period in primitive human society occurring twice in the year; we see a reminiscence of this to-day in registry office records, at least in Rotterdam, where the birth statistics point to two periods of the year in which the number of conceptions falls to a minimum, viz: the depth of winter and height of summer.

But in the course of time man became less animal, the group-organisation gradually changed into a geographical communal organisation, conscious behaviour took the place of instinctive acts to a greater extent, and this sexual resemblance to animals naturally tended to disappear. Culturally man became more domesticated. With his higher reasoning powers he has learnt to control his desires and thus to increase and multiply his pleasure. No longer a solitary bestial intoxication as in these annual festivals, followed by a year of dull depression, but always cheerful and sexually excitable.

This controlling of the sexual impulse, one might almost say: this normalisation of the sexual passion, is one of the greatest victories of the human over the animal. The energy and excitation of animals is a fierce flame of but very short duration, but a normal man is always excited, industrious, full of energy and sympathy. Man's whole appearance points to this. His upright carriage, an attitude that dates from the

tree-climbing period and was later perfected by the use of weapons of offence and defence, an attitude which is only assumed by our domestic animals at the moment of the procreative act, is frequently to be observed amongst the higher species of apes, but the upright posture first became habitual in mankind,* always energetic, ready for the fight or for procreation. So this attitude is always a symbol of our lofty dignity. Only the child, being asexual, still crawls on four legs, as his ancestors once did.

This transition, from the savage rutting period to a conscious and permanent sexual life cannot be over-estimated; it is the transition from animal to human. The triumph of the mind has also become the triumph of sexuality, and vice versa. Man stands at the top of the evolutionary series, not only on account of his higher reason, but also because of his higher sexual life.

* In his original work „Das Welträtsel Mensch“, (pub. Giesecke, Dresden. 1921) ERNEST KLOTZ advocates the horizontal posture on all fours for men as for the animals. He is right insofar as every change from our usual posture represents a thoroughly useful massage.

45. *From group-relations to private affairs.*

I have already observed that the sexual life was formerly intimately associated with the social organisation of the system.

But we have now become, especially under the influence of Roman Law, such confirmed individualists that we can scarcely imagine at the present time what that means. And even if we read about it, it seems still more obscure, for from a sense of decency we always speak of "group-marriage", and this term seems to us to be something contradictory. For we scarcely know of any other marriage than the various forms which have developed from the custom of stealing the bride, and they are all intended to be wholly individual.

The group-relation however, originated in far earlier times, and even existed among animals. The reader will doubtless remember the allusion in chapter 43 to the shoal of fish in the sunny sheltered corner of the pool, swimming so close together that they rub each other's sides for a long time, and all mutually provide each other with sexual satisfaction. This is indeed sexual communism in its purest form,* because the fish know no individual intercourse; but it is just because of its simplicity that this example is so illustrative of the principle.

And man also, defenceless as he is when isolated, must first have lived in groups in which the members either sprang from *one* mother or from *one* grandmother, i. e. in groups really composed of blood-relations; groups which constantly split up into new groups, as soon as the original group after a few generations became too numerous to be able to find food for all the members in *one* single place of residence.

At first of course, there was no generally valid law to regulate sexual intercourse, and originally, like everything else,

* In regard to the oldest system of organisation in mankind, as described by *Morgan* in his work "*Ancient Society*", reference may be made to my article: "Experimental Enquiry into the oldest family system with which we are acquainted", which appeared in "*Geschlecht und Gesellschaft*", March 1922; the origin of people's names, which at first appears so obscure then suddenly becomes perfectly clear.

it differed in different tribes, according to their particular requirements and their traditional habits and customs. But sexual intercourse appears to have been usually restricted to persons of similar age; so that sexual intercourse between parents and their children was excluded from the first. Of such relations nothing remains at the present time but a few scattered mythological legends as reminiscences.

Of the intercourse between brothers and sisters there only remain isolated traces in a few primitive savage tribes in the denomination of family relatives, and here it was usually a case not of sexual intercourse between brothers and sisters of a blood, but rather between cousins, because these grow up together in the group as companions of similar age. In such groups cousins of both sexes naturally predominate. In historic times it is only in the ancient Egyptian reigning dynasties that marriages between brothers and sisters or cousins were quite usual.

Historically and ethnographically however we now know only periods and tribes in which sexual intercourse between members of the same group was stigmatized as incestuous. Thus it appears as if, even in those days, too many children in one's own group were no longer desired; and in this connection there were also other interests to be considered. If members of friendly groups hoped to have sexual intercourse with another group, they would bring gifts. There was never any question of gifts within one's own group, for there everything was common property. So a love affair in which the wooers brought gifts was naturally far more distinguished and respectable, and also more advantageous for the group, because the gifts were not presented to individuals, but to the tribe as a whole. So it is easy to understand why unions between members of the same group were early discouraged, and soon expressly forbidden. Once this became a custom, the natural selection of the breed favored this exogamous tendency, for it produced a much more energetic and vigorous race than if interbreeding took place within the group without any kind of effort.

But men did not change their habitation on account of love affairs; each one spent the whole of his life in the same house and farmhouse in which he was born. If he moved

away he was obliged to leave behind all that he possessed. If the day's hunting had been successful, and it was a fine night and the moon was shining, he would slip over to one of the friendly groups with a portion of the booty. Here the gift of game would be the best introduction to ensure a hearty welcome, not only from the male members of the group, but also from their sisters, he would have no particular preference beforehand as to which of the sisters he would choose. So this was a group relation, not only for the girl, but for the young man also. For if one man was recognized as a regular visitor, then all his brethren were also welcomed as wooers. The gift was not an individual one either, but from one whole group to another.

This unsophisticated and natural method of procedure gradually evolved to a well organized social system which as such is termed "the tribal or group system", and as a sexual system "the matriarchate"*. The children live with their mothers and mothers' brothers, or with the grandmothers and *their* brothers, i. e. the family descends through the female line. The man seeks sexual intercourse outside the family group; as is often the case in the country even now, where the young man spends only the night in his sweetheart's house. On that account I have hesitated to speak of marriage in this case, because it is really only what we call a regular liaison.

But the more the man showed in the course of time a personal attachment for a woman and her children, in preference to his sisters' children at home, the more the relation became individualized, so that as long as it satisfied both parties, it resembled our marriage to some extent. So they came, first as an exception and then as the custom, to live together for short periods, but the husband always as his wife's guest and within her group.

Gradually however, through frequent change of locality, and from the exercise of various trades, which led to a division of interests, the feeling of solidarity in the group of blood-relations became more and more undermined; and finally the

*) Reference may be made to my brochure on the development, rise and fall of the matriarchate: "History of the development of the communal life of man, with special reference to maternal rights and marriage" (*in German*) Kultur und Fortschritt 379/80, pub. F. Dietrich, Gautzsch, near Leipzig, 1911.

common family name was often the only remaining sign of the blood-relationship.

Thus the whole group system gradually disappeared. In the course of time it has been forced to give way to a more individual organization, in which the community no longer depends on blood relationship, but includes all the families who live in the same spot. Nor is the family composed as formerly of blood-relatives living together, but of an individually chosen sex companionship.

How this fundamental change occurred, we shall now discuss.

46. From being the husband's slave woman becomes his companion.

As we have already remarked, in many species of mammals the brutality of the male was greatly feared. And it has unfortunately also gained the upper hand in mankind. In some places sooner, in others later, the friendly relationship of the sexes, such as existed in the matriarchate, has thereby been entirely destroyed.

How did man come to be such a kill-joy?

Originally man, like the lower animals, did not fight against his own species, but only against lower species which were easier to overcome. Hunting and fishing, however, were not always very fruitful sources of food, and the supply only began to be regular when man learned to raise cattle and sow corn or cultivate vegetables for food. Thus woman's work became heavier and heavier.

It was only when man learnt to smelt and forge iron from the ore, that he could grow as much corn in the fields and kill as much game in the hunt, as he required. Then for the first time man was lord of creation: The golden age seemed to have arrived, but alas. It was an illusion!

Hunting and fishing were soon exhausted with the new implements; war against his neighbors was much more productive, for he could steal what they had laboured to produce. Instead of the golden age it was the iron age.

Thus in the history of evolution it was not only good, but also evil, namely militarism, that continued to develop.

All the previous social relations were now overturned. Formerly through food shortage prisoners of war could not be kept alive, but now the boys and girls were driven to work as slaves. Thus men acquired private property, and the first sort of property was female slaves. The conqueror had unlimited power over them; they must live with him and bear his name; and any children they had were his private property and bore his name also. And thus originated marriage with

paternal authority that still exists in almost every country in the world.*

In this way the original feeling of solidarity in the group system of blood-relations was quite ended; every man sought to conquer new territory by force. And what could the woman do against such deeds of violence? At first she tried, mounted on horse-back and armed like a man, to maintain her individuality, — hence all the legends of the Amazons, but as Herodotus tells us, she was nowhere successful; and without man, woman would have died out anyway.

Yet many centuries passed before the matriarchate was entirely superseded; and even now traces of it exist. The history of Roman law repeatedly mentions the struggle against the matriarchate in distant provinces; and even in the colonial politics of modern Holland the question is sometimes raised.

And not only has the matriarchate been overthrown by militarism and jurisprudence, but literature and popular customs also point to a decided reaction against it. I will only quote a few examples.

In classical literature especially we find the idea maintained that the child comes from its father, and that the mother is only the field in which the "seed" is planted by the father.

So as to justify the presumption of the father that the child is his, the wife must live as far as possible in the retirement of her home entirely shut off from the outer world; whereas the husband is free to go everywhere.

In widely distant parts of the world the "couvade" is celebrated. This represents the "lying-in" of the father, i. e. as soon as the mother goes to bed for her confinement, the father also goes to bed and lets himself be nursed and feasted, as if he had gone through the confinement himself!

In Holland it is still the custom for the midwife to bring the newborn child, as soon as it is washed and dressed, and offer it joyfully to the father, who takes it with outstretched arms and then makes the nurse a present. Amongst the Romans this festivity had a very special significance, for on

* Only for a brief period during the French revolution, and of recent times in Soviet-Russia have people dared to institute a form of marriage in which equal rights are granted to both partners, instead of the traditional coercion of the woman.

this occasion the father had the right either to recognize the child as his own and bring it up, or to disown it and have it killed. What a contrast this was to the former matriarchal law!

Almost everywhere amongst primitive races it is still the custom to allow newly-born children to be killed, if it has not received any nourishment. Originally it was the mother who decided this, when taking the child for the first time to the breast. It was her decisive gesture that was now imitated by the father.

The male priesthood which now began to take the upper hand, was not favorably inclined towards woman; because formerly, in the time of ancestor-worship woman was the honored priestess with special attributes of sorcery and prophecy! These happy days were gone for ever.

Whilst the fertility of nature was symbolised in the old pagan temples of India by statues of a many-breasted goddess, amongst the Greeks and Romans the same idea was represented by the masculine symbol, the naked phallus of metal or of stone.

After the favorable period of the old Vedas, the Brahmins of India went the farthest in the subjugation and despal of woman. There were for instance the custom of marrying tiny maidens of school age, the veil that woman must wear, and the cramped courtyard with its open-air kitchen where she must spend all the days of her life even if she belonged to one of the higher castes; and above all the widow's suttee, which indeed has only been repressed very recently.

Thus there were four effective, but very cruel means of protecting public morality as the priests understood it; so at least it was ensured that there was not one single female who was not in some man's power.

Amongst ourselves in Europe the canonical (ecclesiastical) law was even harder for woman than the Roman law; and harder still was the priesthood with their countless burnings of witches, the moment they suspected that one of them had entered into communication with occult powers. And economically, in the Middle Ages and unfortunately even much later, woman who from time immemorial had always done the hardest work, was scornfully called "the weaker sex". A halo was placed around her weary head only as the "*mater dolorosa*"! Woman as the slave of man! How greatly this

must at first have destroyed all the tender feelings of love. Yet nature is mightier than the power of the priesthood or of any weapons, and the sexual life is so strong that in spite of everything, woman has won the victory through her tenderness and devotion.

Her condition has improved almost everywhere, and even if marriage was a hard lot for her, outside the married state there always remained a trace of individual freedom, which, it is true, might degenerate into licence, but which was often redeemed by heroic devotion and mutual idealism.

Although Greek history according to Herodotus may have opened with some typical cases of marriage by capture, and the history of Rome begins with the rape of the Sabines, still the classic literature of the Greeks and Romans gave us the wingèd Eros and the roguish Cupid. And this god of love reappears in the Renaissance. Minstrels and troubadours glorified love; not, indeed, legalised unions, but only those in which the gallant knight carried off the fair maiden in secret.

Just as in our adolescence the awakening of our sexual spring-time is not publicly announced, but comes to us in quiet dreams, so also in the world-history the love of kindred souls appears as the supreme height of passion, proceeding not from science or from the law, but awakened as a lofty ideal in loving hearts by the charm of poetry and of art. Only much later did this ideal penetrate into for malmarriage, and lend it a higher meaning.

Legally woman is still unfairly treated, theoretically she is highly honored, — still the practical result is that she no longer feels herself to be the slave of her husband, but is becoming more and more his life-companion.

47. *Love and Courtship.*

The power of sexual attraction is so great that *Darwin* made a separate study of sexual selection, and considered it as a special variety of natural selection. In the wild state the male goes to all kinds of trouble to attract the female and win her for himself. The lower animals do not possess such perfect means of subjugation as man, and the female can always refuse either by running away or by some abnormal position, and so the male must try to win her over with affection. Thus in the animal world it is the male who displays the lures: gay colors, song, dramatic courtship, and above all, strength and energy which will give him the victory over all other suitors.

It must have been thus in the dawn of human life too. It was the man who appeared regularly with gifts to ensure himself a good reception in a friendly group. But when the marriage by capture had become the custom, these steps were no longer necessary; all that was necessary was to fight to the death and carry off the prize.

But in the course of time he found it wiser to escape all these evil chances and all the feuds arising therefrom — we may remember the ten-years Trojan war for the sake of the ravished Helen — by the preliminary payment of an equivalent tribute, first as compensation, later as purchase-price; perhaps a pair of good horses or a few oxen.

It is remarkable that in the course of the centuries the purchase price of a wife has constantly diminished! And now it has been reduced to a free gift, as though to increase the ceremonial festivity, or even simply gifts for the affianced bride which she brings back when married.

Indeed it has now gone so far that the parents think themselves lucky if they find somebody who will look after their daughter, so that they willingly give a trousseau or a dowry with her. And this dowry must not be small either. And then the young husband is perhaps so obliging as to put up with the prospect of a legacy, so that he may settle down on his wife's parents' property. But at the present time all this is

insufficient, and even prior to the great war one half of the marriageable women remained single.

In contrast with former times, it is now the woman who must employ all kinds of lures to attract a suitor, and she practises the same lures as those used by the males in the animal world:* gay clothes, a little music, graceful manners, and last but not least that key to all doors: money!

Whence comes this depreciation?

Apart from her sexual charm, the principal value of woman originally lay in her capacity for work, and secondly her fruitfulness as a mother. In this chapter we will only refer to her working capacity.

It is well known that in uncivilized countries the hardest and most tiresome work devolves on woman; it is equally well known that in the course of time, as milder manners came to prevail, woman partly because of her slighter build, has gradually been spared the heavier work, and her efforts have been directed to less difficult and lighter tasks, the importance of which was not really so great. Besides there were always plenty of women to be had for this sort of work, so why should they be valued or well paid?

The prettier girls were especially relieved of all heavy work, and finally became courtesans, and so gradually idleness and self-adornment became the typical ideal of many women. Indeed many women who work terribly hard in their own homes, dress up when they go out so as to appear as if they do nothing at all. Many ladies who go shopping have even the smallest parcels sent home. And many a one, instead of being pleased when the baker and the milkman deliver the bread and milk at her door so early in the morning — necessities that woman once had to get for herself, milking the cow at dawn and heating the oven overnight — is now only cross because both the worthy tradesmen ring and wake her up so early in the mdrning. Happy indeed is the husband whose wife does not squander everything through her vanity and neglect. Can we then wonder, if depreciation has occurred?

* It seems an ironical lack of taste on the part of our ladies that they often use the same feathers and furs that the male animal has already used for the same purpose of allurement; sometimes even the same odours, such as his genital musk etc. (see p. 184)

Fortunately nowadays the tide is turning again, and woman showed her value during the war. Woman is awakening and shaking her golden chains; she is no longer willing to be a petted slave or a bird in a golden cage. She wants to have a mind of her own, and to be free to marry the man of her choice. Even the young girl seeks to earn her own living! She wants to be able to feel independent under all circumstances and not to let her brothers keep her after her parents' death; which perhaps they are not at all anxious to do either. And if she marries, and one day her husband falls ill, she will be able to provide for the household and take care of him and the children.

And when the time comes for her to marry, she will be able to do so from inclination and affection, not merely in order to have a roof over her head. She brings her education and her training as her dowry, and consequently she can teach her children better when they are well, and nurse them better when they are sick. She is her husband's companion; but there is a division of labour, and each one of the partners has his own individuality. This is far better than it used to be, when all the women of the village dressed alike, thought alike and talked alike, — if ever they really thought when they talked?

There is now a new era in courtship for both sexes. The animal lures are no longer required; neither man nor woman needs to use them now. They must both be polite, chivalrous and considerate to each other. So at last sexual intercourse is no longer a surprise or an outrage, but a mutual surrender of two loving souls to each other.

48. From Paradise lost to conscious motherhood.

The other reason why a woman was so valuable was that she could bear children. The male slave could do heavy work as well, but only the female could produce children: sons, many sons, so that there would be plenty of warriors for future wars; daughters, many daughters, so that they could be sold in marriage.

Unfortunately, in historical times nothing has depreciated so regularly and systematically as the value of human life and this has been proportionate to the increase of population. And in this connection we can readily understand the decrease in value of the woman as a producer of children. It is the counterpart of another equally constant phenomenon, that is the rise in the price of land with increase in the population. These are two sides of the same problem.

We therefore observe, in all classes of society, a general disinclination to excessively large families, in spite of the rulers and their satellites, who would like to urge everybody to produce as many children as possible.

“With pain and sorrow shalt thou conceive and bring forth children!” was the curse laid on woman at the fall. On the other hand the prohibition of sexual intercourse within the group itself acted as a considerable check; so too did the prohibition of intercourse during the menstrual period, which is almost as ancient and sacred; then came the organization of marriage, with which was associated a contempt for extra-marital intercourse; and finally even the idea that sexual abstinence was itself something superior, praiseworthy and pleasing to the gods. It all had the same tendency.

But whenever it became evident that all these various factors in prevention were not sufficiently successful, men were driven to adopt the most terrible repressive measures: cannibalism, the systematic slaughter of children, girls especially; the killing off of all aged people, the exposure of newly born infants, and abortion. When all these were found too cruel,

then sorcery, herbs and decoctions of all kinds were tried* to prevent conception. The same aim, prevention of conception, may be perceived always and everywhere.

Is it then surprising that woman should be so little valued as the possible mother of children, and must even bring a dowry in order to get a roof over their heads?

But a way out has now been found. At last we have succeeded in finding what has been so eagerly sought after for centuries, a practical and valuable, though perhaps not absolutely infallible method of birth-control**.

With the coming of birth control ends the depreciation of human life and of woman as the bearer of children. The efforts of DR. MENSINGA, who was a really pious christian and a very humane gynaecologist and of many others, have at last freed woman from the curse laid on her in Paradise. Married couples can now be happy together, and still not produce more children than is expedient.

Just as involuntary motherhood lowered the status of woman, so birth control and deliberate motherhood will bring her once again into honor, and her creative power will again become a blessing.

* See the remarkable work by Baron Dr. FELIX VON OEFELE, *Contraceptive Drugs*, published in „*Die Heilkunde*“ a practitioners' monthly, pub. Vienna 1898. Edited by Dr. Julius Weiss.

** It is not within the scope of this work to dilate on the subject of birth-control, but those who wish to be well informed on all the arguments *pro* and *con*, would do well to read my book "*Rassenverbesserung*" an authorized translation of which by CLIFFORD COUDRAY has been published by Richard A. Giesecke, Dresden, 1923, under the title of "Eugenics and Birth-Control." (208 pp. 4 to, with 6 tables).

49. *Our higher differentiation.*

This one great sexual function with its love and its pain, with its supreme delight and its birth-pains, has now become differentiated into two distinct voluntarily separated functions: the charm of love if love alone is wanted, and the production of children if children are wanted.

This highest of all stages in evolution has only tardily been reached, but it has been reached at last. It is not really surprising that it took so long. It is only since the discovery of the microscope enabled the reproductive cells to be recognized, that the study of the whole process of fertilisation has been possible, as we mentioned in page 97. Up to that time we had only been able to form fanciful notions of the origin of individual life, somewhat like the uncertainty in which we stand about the origin of cell-life on the earth.

Indeed the question has long been discussed whether man originally suspected the causal nexus between the procreative act and the occurrence of pregnancy; so much time elapses before the latter is noticeable!

And how could he light on this conclusion at a time when every normally constituted female had regular sexual intercourse. Experience at that time, on the contrary, went to prove that very often sexual intercourse had no further consequences.

The counter-test, that when there was no intercourse there could be no pregnancy, was only made later, when animals were kept in captivity, or men and women in separate prisons.

Explorers such as ROTHE, STREHLOW and SPENCER GILLENS have recently established the fact that even at the present time there are tribes in Australia who have absolutely no idea of the connection between the two functions. But almost everywhere, among the primitive races, the people are convinced that sexual intercourse exerts a favorable influence on fecundity; and it is interesting to note that Professor WILKEN has observed in Java that the native farmers, when their fruit trees produce too little fruit, imitate the movements of coitus against the trunks of the trees.

Primitive tribes everywhere are of opinion that fecundity itself is a natural phenomenon which befalls woman

the influence of some sacred richly developed trees or fruit or sacred waters; when for instance the woman sits for a time under such a tree or partakes of the fruit, or bathes in the sacred waters; in eating the fruit the mouth is the entrance into the body, and in bathing it is the navel. Accordingly if they wish to avoid pregnancy, they are very careful not to stay under such a tree, &c, and all such exciting causes are carefully avoided.

It is of course the priest who plays a predominant rôle in the mastery of this mysterious force of nature. Just as he has the power to render the fields fruitful by calling down sunshine and rain, so too he can control feminine fecundity by the conjuration of evil spirits and by the application of an amulet carved from the wood of a particular tree. When the priest is called to attend a woman who has always been sterile, he cuts such a piece of wood, ties it to the end of a whip and whirls it rapidly round. When it makes a humming noise, he says it is the evil spirits flying away.

Or if this has no effect, (which is almost incredible), he prescribes a period of sexual abstinence, during which a piece of this sacred wood must lie between the couple every night. In this latter case we see expression given to the notion that the sexual act between the married couple may under some circumstances even exert an unfavorable influence on their fertility. It is perfectly clear to us that a crude empiricism may often have given rise to this idea, for we all know that nothing excites the sexual impulse so powerfully as enforced abstinence.

In a higher stage of civilisation it is thought that though it is indeed the man's physical movements that produce the physical effect, the soul first enters the new creature at the third month, as a divine gift.

For this reason in the Middle Ages it was thought no crime to produce abortion before the end of the third month of pregnancy, as it was no sin against life; and indeed even now public opinion for the most part takes the same view.

The tiny spirits of future children, before a home had been found for them, were thought to hover somewhere in a dark mysterious wood, or over a pond, or in a cave, or in some other inaccessible and mysterious place. Then when the occasion

arose, they would be brought to a family by a sacred beetle (the scarab), or by a bird, such as the ibis or the albatross or the stork. That which now even our little children will scarcely believe, was then such a mystery that the priests themselves only imparted it to each other with fear and trembling.

So it is not surprising that the causal nexus remained so long unknown, and that even now so many people look upon it as a profanation of a sacred mystery, and fight against it as if it were a mortal sin, when science reveals this causal nexus and wishes to make the knowledge available for the public.

It was only in 1850 (the year in which I was born) that DU BARRY for the first time observed the penetration of a sperm-cell into the ovum of a rabbit, rendering the connection of cause and effect in this secret process as clear as it is in all other human processes for which we feel personally responsible.

After this observation we had only to notice how nature goes to work to make the procreative act at one time fruitful and at another sterile, and man can also do that now voluntarily.

If we give this achievement its proper place in the natural progress of evolution, it then strikes us forcibly how greatly in this respect (see page 239) nature is always improving her methods of evolution; one might almost say she has "evolutionised" them.

In the very lowest forms of organic life, where there is still no trace of sexuality, their boundless prolificacy is almost their only means of salvation, their only weapon in the struggle for existence. This asexual multiplication is almost unlimited in the unicellular organisms (see page 228); and how immense this may be too in spore-formation can be seen in the clouds of spore-dust liberated when we tread on a ripe puff-ball (*Lycoperdon*).

When we come to a higher stage of evolution, things become much more complicated, as we saw in chapter 40; reproduction is limited, but the product of fertilisation becomes ever more beautiful. It is indeed a fixed law in the whole of evolution that the higher we mount in the scale the fewer

will be the offspring. For then it becomes ever more indispensable for all the conditions of life to be harmonious before a new living creature can be produced.

In this evolutionary tendency the highest stage of development is reached by the human brain, which is the highest of all the products of nature. Nowhere else can it be so clearly seen, how nature attains her object, and for this we must thank her.

To a certain extent she attains it through the introduction of all the sexual obstacles and difficulties which, as we have seen in Part II, bulk so largely in the higher species. And now we can thoroughly understand what many a reader must already have thought out for himself when all these obstacles were mentioned; he must have wondered how it is possible that nature herself has not overcome them all long ago through natural selection in breeding. But no, these very obstacles were so many aids to the higher evolution of the species, because on the one hand they stimulate desire and on the other they limit prolificacy. But the higher reason of man, which seeks to bring both objects into harmony according to his conscious intentions, forms the crown of this endeavor.

The great importance of this differentiation is, just as in all differentiations, that each of these functions can now perfect itself. At first, of course, all such innovations meet with a certain amount of opposition, as though they were an attack on customs which on account of their ancient traditions have become sacred to us. The same is true of every newly occurring point in evolution. We may be quite sure that the first prehistoric man who made weapons for himself, such as hammer, axe spear or club, by fixing a flint to a stick — had to bear the reproaches of his companions, that he was a coward who could not conquer by his own strength alone! Meanwhile personally, he surely would feel very proud that he was so much more successful in hunting than his comrades.

Only now can sexual love in and for itself be honored and guarded in its lofty significance, while formerly all these higher feelings were sacrificed to the question of fertilisation, because this is of such premordial interest. A book like this, in which the sexual impulse is at last honored in its primary significance, would formerly have been treated with disdain as

a useless and insidious work. Now however, the charm of love may be honored on its own account; not only as a means to an end, but as an aim in itself.

Ethically also, this is a great advance. The sexual life now includes two different objects, two separate chapters: the ethics of the sexual feelings and the ethics of procreation. Each can now be considered separately and its principles better studied.

From the ethical point of view this separation has had good results. Formerly, when the fear of pregnancy was the leading motive of chastity, it only concerned the woman; the dual morality, i. e. *one* law for the woman, *another* for the man could not be avoided. Now however, self-control and chastity for both sexes are actuated by higher ethical considerations than the crude fear of punishment. This signifies a far higher standpoint, a new conception of ethics, which makes itself felt in all moral teachings.

50. Sexual pride and sexual rivalry.

Among the lower classes of animals the female, as bearer of countless numbers of eggs, is frequently bigger and stronger than the male with his microscopic reproductive cells. It is only when we reach the vertebrates that we find the male decidedly the stronger. In him the sexual impulse and the obstacles to mating are increased to such an extent that the procreative act almost takes the character of a rape. Furthermore in the human race this process was continued first through hunting and then by warlike exercises.

In modern times the more our mental and ethical development proceeds on a higher scale, the more this difference in the sexes tends to disappear, while differences between individuals come to the fore.

Indeed recent experience shows ever more clearly that with similar antecedents, training and exercise, the individuals of both sexes can prove of equal value. So the time will soon come in which presumptuous behavior of the male partner will be considered as an antiselective factor.

Until now, on account of his social position the initiative of a proposal of marriage lies with the man, and on account of his more aggressive sexuality the initiative in the procreative act also; but it must not be forgotten that just at the decisive moment of fertilisation, it is the egg-cell, so richly charged with nutrient contents, which takes the initiative towards the sperm-cells; just as it is primarily the woman's charm which draws the man to her.

Besides, MENDEL's experiments (see page 33) teach us that in general the big egg-cells and the tiny sperm-cells are equally good carriers of hereditary traits*. It really makes no difference either in the numbers or the characteristic of the descendants, whether for instance a cross-breed of sheep is started with a black ram and a white ewe, or vice versa, with a white ram and a black ewe, the result is the same. This is indeed

* In some cases the sperm-cell, and in rarer cases the egg-cell has one chromosome more.

a most decisive proof of the fundamental equality of the two sexes.

We have still to speak of the secondary sexual characters.

The typical organo-chemical substances which are elaborated by the testes and ovaries act as powerful stimuli to all the epithelial tissues (see chap. 4) especially to the growth of hair*. Secondly through their influence in the above mentioned organs, the descendants of the suppressed embryonic epithelial cells are reawakened and stimulated to fresh prolificacy. And then the sebaceous follicles are also irritated** sometimes so greatly as to cause formation of pus (see page 37), which often causes acne and comedones in young adolescent men, while in young girls the mammary glands increase in size. So this principle obtains in both sexes. Thus too we see that the young people of both sexes are not all unjustified in their sexual selection in attaching great importance to thick glossy hair, smooth skin and fresh complexion. In many species of animals too the care bestowed on the fur during the wooing of the mate is remarkable.

But still there is one difference, and it is just these details which cause man's sexual pride, and which really seem to brand woman with inferiority. The woman remains as beardless as a child, has a high childish voice, and a slender bodily structure like a child. In several passages in his "*Descent of Man*", DARWIN states that where there are differences in the animal world, it is the female type that mostly resembles the infantile type.

But is that a disadvantage? Once the woman is only old enough, she too grows a beard, although not such a flowing one, because the energy of growth of her entire body has declined; she also acquires a less graceful exterior, and a rougher, deeper voice. But man displays these phenomena of age much earlier than woman, but is that any reason for pride of sex?

* The hair is a very prominent epithelial structure and hairs begin at the age of puberty to grow freely in the axillae and on the pubes in both sexes.

** The gland-cells of the sebaceous follicles are really only epithelial cells turned unwards (see page 16); and the milk glands may be considered as a sort of immensely enlarged and branched sebaceous follicle.

Thus *a priori* considerations are a poor weapon in the battle of sex, this must be waged empirically. And the best solution of this problem will appear more clearly, the more it is rendered possible for all individuals of both sexes to fully develop their individual talents and to use them to advantage. And the sexual life will also come sooner to perfection.

This may be the evolution of the sexual life in the near future.

V.

PSYCHOLOGICAL SECTION.

51. Introduction.

I feel sure that many of my readers, every time we have had to talk about glands and tumors, bloodvessels and organo-chemical substances, have felt inclined to say impatiently: "but what has all this to do with the refined and tender feeling that we call love?" The time has now come for me to answer this question.

It is quite a simple matter. The materialistic processes which we have dealt with anatomically in Part I, and functionally in Part II, force us to seek a partner, and it is the stimulation of the affections, the emotions, that are thus called forth, it is this nameless longing that we call love. In this section we will take these emotions as the subject of our study. Just as one must first know all there is to learn about the mouth and the tongue before one can understand the sense of taste, so it was necessary to study the genital organs before it was possible to understand, to evaluate and to control love.

Even the most rigid of materialists will not wish to restrict his knowledge to the raw material, he will only begin at the beginning so that he may better gradually reach the heights of knowledge. And thus it was necessary for us to discuss the crude details of the lower spheres of our bodies, although possibly it may have annoyed some of our readers. It is something like the shudder that goes through us when we see a skeleton for the first time in our lives, for we forget that such a skeleton is living inside us, forming the framework of our physical and mental structure; and yet it is so useful to know it, for otherwise we can never understand the processes of our daily lives.

There is something painful to our feelings in this: the facts themselves so simple and so cold, and the rapture so transcendent. Quite right! And everything that we read here about the love life will surely be hopelessly far behind what we shall really feel, as soon as we actually experience it for ourselves. That will be smoothed down when we begin to speak about it, and even more when it is read; paper is so

cold, and so is printers' ink. But the author should not be expected to set all his lady and gentleman readers in a sexual ecstasy; that would indeed be asking too much! This realisation remains for each one as his own life-drama. And everything that I mention here, my dear readers, as feeling myself, can only possess a meaning for you in so far as it finds an echo in your own feelings.

But it will have a scientific value for you only if you read it in connection with all that we have already written in this book. Only then will you see cause and effect clearly, and also be able to control this life-impulse for the future.

This incongruity between the physical foundation and the spiritual feelings is not only met with in the sexual sphere; it lies fundamentally in the mysterious combination of the material with the psyche. What likeness is there for instance, between the water-white fluid which we chemically term alcohol $C_2H_5(OH)$, and the intoxication of an evening spent not too wisely but too well? Or if we wish a physiological example instead of a pathological one; what is warmth? Warmth is a quickened movement of the atoms composing our bodies; but we feel our bodily warmth as an agreeable sensation, that affords us much pleasure. And what is a bed? A collection of materials which are poor conductors of heat in which a tired half-nude person hides himself; yet we feel it to be a warm nest in which we can lie in comfort.

So also sexual occurrences stimulate our circulation, respiration and psychic life, so greatly that we feel ourselves imbued with redoubled energy. And in this sphere it is one of the finest duties of science to study the connection of cause and effect.

This has unfortunately been too long postponed. Embryology, obstetrics and venereal diseases have been studied, but the relation of the inner love-life with the material processes has only too often been omitted from the course of study. In the sexual sphere we have up to the present clung far too much to dualism, and that has done us a fearful amount of harm and caused untold misery. Parents do not understand their children, once they are grown up.

Then the maiden revels in dreams of yearning and longing:
"Oh! ask the stars, whether I love you,"

which at first looks so very poetical, till the time comes when she pines and fades like the rose watered only by tears; while the youth only too often drags down into vulgarity what should remain sacred. Both of them feel very miserable. Ah, how many young people I have seen go under most pitiably in this way!

52. *Childhood.*

The history of evolution begins with the asexual stage, and the first stage of our lives is really still asexual. Children do not yet feel the call of sex; this is fortunate, for they would be unable to bear such a powerful stimulus. The little heart already beats so wildly, the eyes sparkle without this stimulus; it is the excitement of their childish games that makes their cheeks glow. Everything that the child sees and hears is full of novelty to him. Each day brings new experiences, new sensations; he can do something today that he was quite incapable of yesterday.

In the little child almost every part of the body (see chapter 42) is still almost as highly sensitive and easily stimulated, as in the adult the sexual sphere alone. It would be an impoverishment of feeling if the child had to change places with the adult. Every portion of the child's body is so highly sensitive. And on that account, instead of appearing to us asexual, a child often gives us the impression of being more sexual than many an adult; entirely apart from the fact that when we grow up we learn to conceal our sexuality as a matter of principle. And that is the charm of this age; the innocent and unaffected, the great calm eyes without fear or shame, still so entirely free from all that disturbs our peace of mind.

But we should be wrong to conclude that the child is absolutely asexual. Of course if the child was born in an asexual environment without little brothers or sisters, without father and mother . . . Then perhaps his sex-consciousness would only be awakened with the arrival of puberty.* But the contrary is the case.

We are born and brought up in a family, which has not its origin, as in earlier times, simply in blood-relationship. We are brought up in a society in which from the earliest times the difference of sex was the principal reason for all

* Perhaps the production of the organo-chemical sexual substances and the consequent awakening of the specific sexual stimulus, may occasionally begin very gently, and gradually arrives at puberty.

division of labor. Difference of condition and difference in age are both only relative; whereas the difference of sex is an objective fact, which can neither be changed nor denied. The difference in sex overrules all other considerations with us; indeed one feels quite different towards the opposite sex, from what one does towards one's own.

Every child lives with us in this sexual world and likes to be given its full rights as a sexual being, even if only as a sexual being *in spe*. The little boy knows very well that one day he will be a man, and would already like to order his sister about, if he was not forbidden to do so. And she knows too, that she will grow up to be a young lady, and perhaps already puts on airs and is a little coquettish and saucy. Perhaps it is not quite right of us to find this sort of thing charming and so readily accentuate the sex-difference in their clothing, their games and even in our conversation with the dear little creatures. But when this is not carried too far, it really enhances the charm of the child; and at the same time is a preparatory education for the real difference in the sexual characters later on.

Now is the time of childish innocence, and yet there is a trace of the sexual; like the dew of the morning, not on the grass but on a rosebud. He is so brave and bold, and she so timid and dependent with her gentle little ways, which are so much more charming than those of an adult. Later on her behaviour may have something studied or intentional in it, but now it is still artless and surprising, and has nothing of the official and formal character of later years. The little angels can come and caress us in such a tempting manner, if they want something from us, or perhaps only seek to attract our attention and to be praised and admired a little; but when the sexual charm is added, they are quite irresistible.*

There are children who are so fully aware of their own charms, that they do these things on purpose, the tempting

* To be honest about it, we must admit however, that in such cases the heterosexual preference originates more with us than with the little child. A little girl is more likely to be praised by a man than by a woman, if she is always seeking to be cuddled and caressed; a woman would much prefer a plucky little boy. And at what an early age the little ones fully understand this, and take advantage of it !

little witches! Not dangerous for a man in the prime of his manhood. He knows that he must be constantly on his guard, clad in armour of steel; not so much against these little fairies as against grown up girls and women. And still, a man who has felt a disgust for some impure woman, is perhaps more liable to fall a victim to the charm of the pure soul of a child.

But the most dangerous of all is the relation of such a little fairy princess with an elderly gentleman, which in its way is sexually considered, absolutely innocent; for she is not yet dangerous, and he is so no longer. So these two opposites need nor repel each other, and with such a great difference in their ages they are doubly proud of their mutual affection; they are just the best of friends. And yet this friendship is from the very first the moral undoing of the child; it is dangerous for the little girl, and far more so for the man. For if they are just once a little too intimate together, nothing wicked, just a little cuddling and kissing, nothing more, perhaps only a little unintentional touching and fondling . . . then the world cannot find stones enough to hurl at the "old reprobate"! Of course it is sometimes justified. "Woe unto him who offends one of these little ones; it were better for him to hang a millstone round his neck and to cast himself into the sea!" But to be just, one must really admit that a child can often be a consummate coquette; not really bad, only in play; but it is a pity when a child begins to play with fire.

Then there is the judicial enquiry in such cases. The child tells such dreadful things about the old gentleman, that they cannot be repeated in public. And how could a child know such things if they had not happened! But a child is a miniature man, and can already be corrupt and cunning. The teacher or the judge who thinks that only the truth comes from the mouths of children, proves that he is not fit for his office. The child may not be wicked, but possessed of a boundless imagination. I have known cases in which the most dramatic stories naively told by children have led to the most terrible accusations, and which were really lies from beginning to end. It has been proved after all that it was nothing but a tissue of falsehoods imagined by the child. One may read of many such cases in medical jurisprudence. The child often does this merely for the sake of causing a

sensation. She soon notices that she attracts great attention with such a story, and that all eyes are then fixed upon her.

These are however exceptions. I only mention them as an instance of the fact that in the child there exists sufficient inflammable material potentially, if not actually, and that little flames dart here and there long before the ripening sexual feelings set all ablaze.

And it is not only a little sexual idealism that is to be observed in the child, the crudest realism is not always lacking; this we may see amongst the lambkins in the meadow or in a litter of puppies. And there is the uproarious laughter of children in their games, which follows the teasing and tickling of no matter what part of the body.

Long before this childish general sensibility has dwindled with succeeding years and become limited to the sexual organs in particular, the little rascals have noticed for themselves that these places are specially sensitive, and this is the first temptation to precocious excitation of these organs. This sometimes begins with birth itself (see pp. 73, 74 and 89) and becomes a confirmed habit at puberty. It is always a threatening danger, which requires much tact and patience on the part of parents and teachers, but which may be overcome.

A fine healthy child, that is kept agreeably employed and brought up strictly will not fall into bad ways, and sexual reveries would only bore him. A child is of itself inclined to both good and evil, not only to evil. It is much too active to think of this one point so much that it becomes a passion. Everything else seems much more important to him than sexual things. And even when it happens that the child has got into some little bad habit, it is easy to break him of it. He has his lessons and his play to take up his mind during the day, and at night he needs rest. He thinks of nothing else; that is if he is a fresh and healthy child properly trained and sufficiently looked after.

No matter how many evil influences may surround us, and no matter what gross faults we may sometimes discover in our own children, their characters have not yet acquired a set form, so that with loving but firm treatment all may be put right. And sexual errors are not so deep-rooted in children.

The best that we can wish a child therefore is that he should remain a child as long as possible, that the slumbering forces should not be awakened too early, for once aroused, they cannot so easily be quieted. We should look with pitying eyes on the unhappy children of the proletariat in our big cities, and compare them with the miserable little plants on the stony gravel paths (see pages 248 and 251) which bear flowers from sheer poverty before they are fully grown.

53. Love in childhood days.

In the last chapter we mentioned, besides the simplicity of childhood, all sorts of moods and fancies, outward signs of approaching sexuality. Now we come to the deeper seated feelings of tenderness and affection, which are felt with such special warmth in childhood and which may possibly be tinged with sexuality, even in very young children. These signs prepare us for the love-life of later years.

These intimate feelings may originate in very different ways. Though in reality the causes are somewhat mixed, yet for the sake of clearness I will only deal with the two most important modes of education separately. In one the material comes first to the fore, and the character only becomes refined and mentally improved later; and in the other the finer mental impressions are imparted first of all, and the material realization of these ideals comes much later.

To imagine the first case, let us think of the most primitive civilisations, or of the most primitive stages of society which exist at the present day, e. g. in the country in places where the children still grow up in the midst of the crude life of animals, or we may think of the lower orders in towns, where the child often sees and hears too much from the human beings by which he is surrounded.

One might suppose that these crude contacts would stimulate the child's curiosity and excite his sexuality. Not in the least! At first all these things will be absolutely devoid of interest for him, for he is too young to experience any sexual sensations in himself. And indeed, if nothing at all is hidden from him, the sexual acts of others will scarcely attract his notice. Even when a little child sees the sexual act performed before his eyes, it only seems to him to be the urinary function transferred to an unaccustomed object. Only when he begins to feel a little sexual stimulation himself, and especially at puberty, the boy may try to perform some sexual act or other, such as he sees performed around him, perhaps solitary or mutual masturbation, and at first without any altruism. If later

on he finds a sweetheart or a wife who attracts him and holds him, feelings of affection will certainly develop; and if his wife provides him with creature comforts, he will feel friendship and affection towards her for some time and finally come to love her dearly.

This path of development from material experiences to the higher virtues is also historically the original path of evolution. But now that we have arrived at a higher, more cultured stage, our children are not obliged to constantly begin from the simple state of animals, in which self control is so greatly jeopardized. With our modern improved systems of training and education we can proceed from psychic idealism to material realization of the sexual ideal, and so attain a far higher degree of human refinement.

We will now glance at the second path, in connection with which the question arises: how can it be possible that even when everything sexual is most carefully avoided and kept hidden from the child, childish feelings of affection may take on this definitely sexual character, and later on develop into sexual altruism.

To follow out this second path is however, far more difficult, because it is not so easy to record the mental as the materialistic. For the very beginnings of our mental impressions, even if unconscious, originate much farther back than the perceptions of our senses, which are only manifested after our birth. Yet I think I am on the track of this path of evolution through slight indications that come to me from the recollections of my own very early childhood.

The affective feelings play an important part in our mental development. The question: whence do feelings of affection come? has been a source of perplexity to philosophers and moralists for ages. It is evident that we find a selfish pleasure in seeking our own happiness; experience proves this. So too if we feel an attachment for those people to whom we are entrusted for the fulfilment of our daily needs. Many theorists have sought to attribute this to refined egoism, because these gentlemen thought egoism alone to be natural. For the sun has stood in the Sign of Egoism since the time of the Manchester school, partly on account of a misinterpretation of Darwinism. But every affectionate man, who is

not bound to this dogma, knows from his own experience that our emotions have not always our own happiness for their object; and indeed often run contrary to it.

To answer the question properly, we need only recollect the course of our own development. We were begotten, and all our organs developed in our mother's womb, in intimate connection with her, and as a developmental organ belonging to her. It was our mother who brought us into the world with pain and suffering, and who fed us long afterwards with her heart's blood, the mother's milk. It was our mother who nursed us and cared for us all through our childhood. We felt as though we were a part of herself, long before we were aware that there were any other people in the world. We only learnt of them long after our birth; at first these strange people worried us, and we often cried about it.

By and by we gradually got used to them, and then we found out that amongst these strange people too there were some who were kind to us; and so we admitted them to our circle of friends, with our mother. But never so close to our hearts. For no matter how far we might be separated from her in later life by circumstances, she always occupies the chief place in our hearts. Even if the whole world is against us, whether we are guilty or innocent, we can always be sure of one thing, that is that our mother will remain true to us.

And then these learned gentlemen naively enquire: but how does man become altruistic? . . . And we were altruistic long before the struggle for existence made us egoistic.

But now let us return to our sexual theme, and enquire: how can these feelings of affection in the heart of a young child brought up as asexually as possible, be already so colored with sexuality? How for instance can the picture of a childish infatuation familiar to all of us if we have studied children, be not merely a simple imitation of what the child sees around him, but in spite of his tender years be already felt in special connection with the genital sphere?

This question is of fundamental importance, for we are here concerned with the delicate inmost nature of the sexual life, as the most intimate combination of the material with the spiritual.

And the affection also, which attaches us to our mother,

shows this same double-sided character. Our mother not only caresses us and comforts us with her spiritual love, but cares for us materially as well.

She it was who nursed and fed us, and she it was also who kept us clean when we dirtied ourselves. She it was who cared for our genito-urinary organs with motherly gentleness.

This was a sacred duty for her; and thus her affection differs from every other.

But as we grew up, needed her help less, became more and more independent, and perhaps nearly or entirely separated from our mother in the struggle for existence, constantly attracted by new charms, — then the image of the mother's love gradually fades from our minds, as the moonlight fades at the rising of the sun. And often when later on in our lives we felt lonely and disappointed, a longing for home and such love and tenderness came over us. Then we re-discovered the same intimate tenderness in other, more youthful persons of the opposite sex, and the light of the bright sexual day rose at last on our horizon, the more the childish twilight faded.

Sexual love is the reproduction of mother-love in a new form. Our mother caressed us and cared for us at both poles of our body, whenever she put us to the breast or cleansed us. So also the newly married clasp each other in love, both body and soul partaking, as they kiss, and finally copulate.

Whenever our mother had tended us, we fell peacefully asleep, conscious of her watchful presence. And indeed many a child cannot drop off to sleep if the mother has not kissed him "good night" or held his little hand for a while, as if to induce hypnosis, or if he does not hold some little toy that he is very fond of clasped in his hand, as a substitute for his mother's tenderness. Is there a more beautiful picture of the married fidelity that he will know later?

It was our mother who taught us to regulate and control our excretory functions, and if by accident we had failed in our self-control we went weeping to her for comfort. So, later on, if we fall into sexual errors, the mother may still give her son good advice, or save her daughter from some desperate act. So too, married people who have been unfaithful, beg each other's forgiveness with hot tears of repentance.

It was our mother too, who gradually weaned us from her breast whereby as we grew older, we were not so often in need of her; but the feeling of sympathy remained unchanged; just as married people as they grow old, and age estranges them physically, remain attached by the same bond of sympathy. Like mother-love, conjugal love can never be replaced by anything else.

Thus it is mother-love that blossoms forth ever anew in the younger generation, and continues in the reproduction of our race. Each young generation is a new link in the chain of continuity of this love* which joins all generations like a holy bond of union.

This picture of the evolution of the psychic sexual love may settle many a problem that up to the present has found no solution; problems that have become burning questions of the day. Steinach has surprised the world by discovering the material principles by means of which the direction of the sexual impulse may be controlled from the age of puberty. Here there is a psychic principle through which the direction of the impulse may be foreseen in the earliest years of childhood. Thus it also appears that in this sphere as well, the psychic and material influences are most closely connected with each other.

We can now realize how it is that little boys often feel a childish infatuation for a grown-up girl or even for an elderly lady; it is simply because she to some extent represents his mother. So we also understand that though boys often feel a childish infatuation, little girls do so still more frequently, and the latter feel like little mothers. And that this infatuation is of such an unselfish character, and is much more a protecting and altruistic devotion than an advantage for the child itself, though the contrary is so often the case in the love of grown-up persons.

So far I have only spoken of the mother, but it is evident that in certain cases a step-mother or the father may fulfil the same function for the child; or an elder sister, or a good old

* St Augustine and his successors always shed tears over the continuity of evil; we have just as much right to rejoice and be glad over the continuity of everything good.

grandmother, when these persons come forward as our guardian angels in our earliest years, so that we think gratefully of them all our lives. It may also be a complete stranger, a faithful servant or a nurse. The result is the same.

In this connection it is noteworthy that in ancient Greece, where boys were educated by a male slave, called a "pedagogue", homosexual love between members of the male sex was looked upon as something superior, far more holy and beautiful than relations with a woman.

Amongst ourselves however, it is maternal love that explains why girls often feel the tenderest passions for persons of their own sex; a love that in their case is frequently much more passionate and jealous than that which they might feel for persons of the male sex who are often much coarser in their love-making.

But because, as we saw right through Part II, in sexual intercourse the initiative comes far more from the man, it is he who, through all the centuries has maintained the heterosexual preference, on account of the maternal origin of his love. This is also, with the material motives explained on page 28 and in chapter 29 a deeply grounded psychic motive for the preservation of the monopoly of heterosexuality; if only the laws had not incited resistance by prohibition.

Of course there is an other side to the picture. Mother-love may be excessive. Even when the child has long become adult; the relationship to the mother may be of such a loving nature, (especially in the case of an only child) that the need of conjugal affection is not felt at all. Or if a marriage takes place after all, then the excessive love for the mother often forms an insurmountable obstacle to marital happiness. How often conjugal bliss is sacrificed to the mother-in-law's jealousy!* Vice versa a mother-in-law's interference may be perfectly cold.

The scheme we have worked out here has not only a theoretical but also a practical interest. As soon as parents and teachers establish this finer psychic connection they, will regard childish infatuations quite differently, with more tolerance and more sympathy. We must go gently and avoid

* In regard to the father-in-law — and that is the counter-test — we never find this complication, for we never had the same corporal union with our father as with our mother.

abruptness, when dealing with the soul of the child. For abruptness is not only wrong, but is the surest way to estrange our children from us for ever. The love of childhood is no joke; it is almost more sacred than the love of later years, which often depends on self-interest. And it is the element of maternal love that refines and ennobles the sexual love of our childhood.

Not long ago in one of the best ladies' papers in Holland I noticed an article in which mothers were very earnestly advised to kiss and cuddle their little children as rarely as possible; these corporal contacts were alleged to be materialistic, they might accustom the children too much to material excitements and in time might make them voluptuous . . . Poor children! I would rather say to the mothers: kiss and cuddle your children all you can, so that later on, in their sexual life there may remain as high a percentage as possible of your maternal affection! This is the best legacy you can leave them!

54. Sexual Tenderness.

Now we come to the awakening of spring! The more we approach the age of sexual maturity, the more irresistibly we feel the attraction of the other sex. At first we were delighted if we could see each other from a distance, if we could exchange glances, and if no one was looking, make signs to each other. But we tried more and more to get near each other, and to show all sorts of attentions; to bring each other a little present or a few flowers, just for the sake of seeing each other again for a few moments, to say a few words, or simply to touch each other. Every touch of the loved one is like an electric spark. Adolescent love is still unselfish. Like unspoilt children, or rather like puppies or kittens they pull each other's hair or pinch each other, anything just to hurt a little.

The ideal is to be near each other, quite close; the feeling of proximity is like sunshine. And it is a real delight, to wrestle together and to tease; a hunger for massage. We draw nearer and nearer; our skin is too hard and dry, a kiss on the lips is much nicer; a passionate kiss as a reminiscence of our first vital function and a foretaste of a subsequent delight.

But for the time being the young people's thoughts do not take them so far. And they are so pleased if they can be alone, together without witnesses. And I must admit that precisely on account of this double material and spiritual character, the spectacle of two sweethearts has something absurd and unreasonable. If we do not share in the intoxicating feeling, our presence is a profanation.

It is remarkable that the most delicate impressions received from the other person often produce the greatest effect, e. g. breathing, the warmth of the body, the rays of light that flash from the eye, etc. Caresses are lavished on all parts of the body, and unconsciously there awakes a new glow, the sexual glow, through which we are more fascinated than ever. Whenever two young people meet, they feel the new glow of life as a mutual charm.

It is a revelation to the young man that such an ideal world can blossom forth from what was at first only a material

sexual charm. For the young girl it is a revelation, when she finds at last the material solution to what she had so long felt spiritually.

Henceforward they feel themselves united in a new enthusiasm. They are happy only when they are together; and everything they are working for, all they do, only possesses a value in their eyes in so far as it may help them to meet each other again, and to prepare their future life as a united couple. So they pass imperceptibly from springtime to midsummer, when all will be in full bloom.

They toss to and fro in their beds at night, feeling more lonely and abandoned than before; all their thoughts are with the loved one. They control their sensuality, and keep themselves sacred for each other. All their efforts and energies are strained with one object; soon to be united, to that end no trouble is too great. The heart beats more quickly, the breast heaves higher, and how one can blush at times! But no longer from fright or timidity as in the calf-years, but now from anticipated pleasure.

I willingly leave the finer psychic analysis to the poet and novelist. Psychology and art begin with the ideal and finish with the material realization; but as a physician I have rather chosen to proceed from the material to the spiritual, and so we both at last reach to the same result. To my mind poetry is often a little indefinite, I am perhaps a little too concrete for the artistically minded. At any rate it is necessary for the reader to try to reach the ideal from the concrete side; both methods have their special advantages and are complementary.

In love there is also a wide field for biological research. This is no profanation; for here also a higher self-consciousness is the first step to improvement. There are so many rocks and shoals that might have been avoided! And this world so rich in pleasures may be enjoyed still more and appreciated more consciously.

With all these sexual stimuli we experience an increase of the energy of our heart-beat, of temperature and strength. These we thoroughly explained in Part II. Especially we feel increased massage-energy. In chapter 25 we discussed the question of the normal body-massage through all our movements being greatly increased by love's awakening; we will

ow go a step further and enquire how this intensified massage can also react and again increase the charm of love.

First of all we must reflect that the proper satisfaction of all these finer stimulations demands much time; there should never be any undue haste. With machinery, if we wish to get tremendous rapidity we can do so, though the result is frequently some terrible accident. The intoxication of love, on the other hand, can no more be hurried than sleep can when we go to bed.

As I have said already, it is the gentlest and most delicate caresses which, because they are so soft and ethereal, charm us the most. And this is a fundamental difference between the biological cell function on the one hand and mechanics on the other. In the latter case the result is proportionate to the force expended, while the biological consequence of these caresses is not.

There is however one mysterious thing in this connection. Why is it that every touch of our doctor, or friend or lover brings us calm and peace, while there are other people whose touch would horrify us and be most disagreeable?

We must learn from massage, if we would solve this problem. We can indeed think of sexual love as the high school of massage; and vice versa a knowledge of the secrets of massage is the best method of perfecting our sexual relationships. Thus a well-informed man can always further refine and multiply his more delicate mental and physical feelings. The love of the heart will thankfully recognize this. And all that I am going to say now applies not only to the mutual caresses of engaged couples, but even to the sexual intercourse of the married which is the climax of courtship.

What does a celebrated masseur or accomplished masseuse do? They never show undue haste; on the contrary they are always quiet and gentle. They pay attention to every detail, particularly the temperature and degree of moisture. In delicate cases the masseur will never begin without first bathing his hands in hot water. And during the massage chill must be carefully avoided. And indeed a sudden cooling down of the massaged portion of the body, which might prove injurious, should always be prevented, for instance by rubbing it with a warm dry towel.

The real secret of accomplished massage lies in a very gentle beginning and end of the operation; the movements should be more energetic in the middle, i. e. there is a gradual rising and falling curve. This applies to each individual movement, as well as for each treatment, and for the whole series of treatments prescribed. This is the secret of massage, just as it is the secret of Nature; Nature always works on this principle* always on the plan of this curve. And that is why the principle is always found so beneficial.

Further, the more extensive the surfaced massaged, the greater the success; a masseur will never limit his attention to the exact spot in which the pain is localised. Just as a little child who has been given some *bonne bouche* enjoys it the more, the greater the surface that can be brought into contact with his face and hands, so can a couple feel much more pleasure when they have passionately embraced each other for some time, instead of abruptly performing the sexual act.

The younger a person is, the more sensitive are all parts of the body, even to the gentlest touch. We should therefore be very chary of rough handling of the very young, because their delicate sensibility would thereby be quickly dulled. And naturally those spots retain the greatest sensibility which are always only very gently touched: our mucous membranes, so soft and warm, and our genital organs. These latter should never be touched at first, so that later on the greatest excitement and the highest ecstasy may be felt from them; at the final moment the ecstasy may even amount to pain.

But at those portions of the body which feel no stimulus, sensibility cannot be developed; sensitiveness to touch is lacking for instance on the surface of the back, especially at those spots which we are unable to reach with our hands. So a person who was never caressed in childhood, must go through a regular schooling before he can be at all capable of feeling and enjoying caresses.

* In psychic intercourse also this principle is important; and not only in the psychic intercourse of lovers, engaged couples and the married. A medical man attending children, or even approaching animals, sees this very well. If he approaches them too suddenly he frightens them at once.

In concluding this chapter I want to consider a turning point in our love-life, I mean the transition from purely ideal to conscious sexual love. One person arrives earlier and another later at this point in his life, where the two streams, the material and the ideal, converge; or to speak more correctly: at the spot where we become aware that these two streams belong most intimately to each other.

This individual divergence, by means of which the one is conscious of it so much earlier than another, constitutes a certain danger between the two lovers. For the one who awakens first, thinks that the other one is fearfully cold, does not reciprocate, and feels himself cruelly deceived; for he feels so warmly himself! Whilst the other finds him sensual, animal, disgusting. Both feel wounded in their most sacred feelings, without knowing exactly why; nor can they explain the reason to each other. I have often seen a love affair that started out beautifully, wrecked in this way; and frequently the couple have separated in horror of each other!

Here again the same undue haste may spoil everything in the love-life. If for instance, this ardent wooer lover had only devoted sufficient time to his female partner to help her to the same consciousness, she would soon have acquired it, and who knows how doubly happy they would have been together.

And no less for complete happiness later on in their married life, it is of the greatest importance for the wife rightly to appreciate the material side of the question; she should not merely accept it more or less indifferently. Both partners should eagerly seek to know each others' value, both should endeavour mutually to increase and improve the charm of their love. The love and caresses, I might almost say the provocation, cannot always come from one side without danger. Many a true wife disdains to be thought a courtesan. Quite right! The word courtesan now has a double meaning and a harsh and bitter taste; but courtesy is and will always be a virtue and a grace. To neglect it just because one is married and tied together by law, is a sin of omission, which is dearly paid for, for it renders so many marriages ice-cold and loveless.

55. The first awakening of Sexual Passion.

In order the better to understand the connection between psychic love and its material foundation, as this is manifested especially in the male, we must now turn our attention specially to this material aspect.

We must let our thoughts carry us back to the transition period, when we were too big to continue to play with children, and yet the adults would not acknowledge us.

To the little child everything is still new: every day brings him new powers, new surprises, new accomplishments. The younger the child is, the more rapid are his pulse and breathing; indeed the unborn child's heart beats twice as fast as its mother's. The older we grow, the more uniformity there is in everything from day to day; our vegetative development nears its end.

Then we feel nervous and depressed . . . until all at once there is a new impulse, and we feel that we are nearing manhood.

We have all been through that in our youth, not merely in imagination, but we have experienced it in our circulatory system, and felt it in our sensory nervous system. The external congestive phenomena, which are caused by the internal phenomena of congestion, further stimulated our heart and our whole circulation. Words fail to fully express our feelings at this time, but still we shall endeavour to analyse this new impulse.

We felt ourselves henceforward so courageous, so imbued with manly strenght, and yet we felt a little shy even of ourselves. Whenever we blushed we showed that we were betraying that which was burning within us, and feeling this, we only blushed the more. Oh, this troublesome blushing in the years of puberty, as the effect of that other congestion! We did not then realize how greatly other people envied us this flush of the dawn of our lives; it worried us so much, and we tried so hard to conquer the habit, all in vain. And the birds and the insects too, just like the flowers, show their brightest colours on reaching sexual maturity.

The beating pulse of our life is the blood pressure, just as in plants it is the osmotic pressure. Those of my readers who perhaps look upon our animal life with all these sexual changes of blood-pressure as something improper, often prefer the vegetable kingdom all the more for that reason. But in this kingdom erection plays the most striking part of all. Possibly not so impulsively as with us, yet to such an extent that rocks are split asunder by it, and paving-stones lifted right into the air. In the bodies of plants it takes place at every point, and is indeed one of the chief functions of every individual cell. The erect position of every twig, the maintenance of the correct form and position of all the sappy parts of a plant, the general bearing of the whole plant, all this depends wholly and solely on the turgor of the cells, which is occasioned and regulated by the osmotic pressure. Only later in the plant's life, and as a sign of age, the hardness of the woody tissue and of the layer of bark comes to play a part, so that while the plant is constantly growing and increasing in size, all its lower portions are held together and supported.

We can easily convince ourselves of the truth of this, if for instance we go for a walk and pick a few flowers; they wither while we are carrying them home, but when placed in water they soon raise their heads again. Then look at the whole vegetable world in the early morning, when everything is still wet with the dew, or after a refreshing shower in the summer time.

But in the vegetable kingdom there is no circulatory system, no bloodpressure. Each cell, supported by the root-pressure transmitted lengthwise through a vascular system, must take care of its own osmotic pressure, and thus each vegetable cell has its own individual erection.

But we warm-blooded creatures possess a circulatory system, with the heart as central point, and with microscopically fine ramifications in every organ, bringing nourishment, life and strength to every part, by means of which we are constantly renewed internally. As modern intellectuals we believe that our psychic life centres in the brain, but that stimulation proceeds from deep breathing and increased blood-pressure. (See page 265; footnote.)

But our different organs have not all an equal blood-pressure. By means of the innervation of the various blood-vessels, their walls contract when necessary, and a diminution of their calibre causes bloodlessness and pallor. However, as soon as these contractions stop, and the blood-vessels widen again, the blood, driven by the force of the heart, returns with renewed energy, and the tissue is subjected to increased blood-pressure.

In this manner our blood-pressure undergoes the greatest fluctuations. For instance, as soon as we are exposed to cold, our skin turns pale; and in the case of sudden emotion or fright the capillaries of the skin contract and we become pale, as if we were going to die. But joy and warmth, as well as a good meal or vigorous work, makes our blood rush through the veins with renewed force, even to the most peripheral part of our skin. There is therefore some truth in the saying: joy is outward congestion, and pain inward congestion or rather: joy is expansion, pain is contraction.

We meet this biological principle everywhere in the animal kingdom; and especially in connection with the subject we are dealing with. It is highly necessary to lay stress on this and to illustrate it with a few examples. We not only find this principle in the higher animals possessing a highly differentiated circulatory system, but also in the lowest of all, the amoeba, which only consists of a drop of semi-fluid albumen. The more favourable the influence to which the amoeba is exposed, the more the albuminous substance, the protoplasm, rushes outwards on every side; while harmful influences cause contraction of the albumen on the side exposed (see chapter 34).

It is much more interesting and beautiful to observe under the microscope the behaviour of the *Rhizopods*, illustrating the same principle, with their numerous slender, long filaments of protoplasm, thrown out like antennae; the more favourable the external conditions, the farther out they extend; while under unfavourable conditions they shorten, and even, when conditions are very harmful, they roll up into a tight little ball.

This phenomenon may be followed best of all in the *Foraminifera*, e. g. *orbolites eomplanatus*. From the minute pores of their chalky shell they protrude their long transparent antennae of protoplasm. But in this case the feelers are so

transparent, that with a high-power microscope we can not only watch the shortening or lengthening of the antennae, according to the favourable or unfavourable nature of the influence, but in these transparent antennae we can follow the finer circulation of the granules of protoplasm swimming in the mass of albumen. They swim in a centrifugal direction on the surface of the antennae, and centripetally at its axis. If all is quiet, the two circulations balance each other, and the entire protoplasmic thread maintains a constant length; while under a harmful influence the centripetal movement takes the upper hand and the feeler contracts, but if a favourable influence be felt, the centrifugal circulation is the stronger, just as in our own arterial circulation, and the thread lengthens in consequence.

I have only gone into all these details in order to show quite clearly that we are dealing with a fundamental biological law; and it is only now that we can understand how the sexual urge, with its congestion of the blood-vessels, represents the climax of our consciousness of happiness, and how, combined with it, love as its psychic phenomenon leads us to the acme of delight. But the most highly organised of all creatures with their higher differentiation, only have one specialized organ in which this phenomenon of the blood-pressure reaches its climax every time, and that is the erectile tissue of the penis in man and of the clitoris in woman. But these organs are specially organised to this end, and admirably fulfil their function.

Which of us does not remember the occasion in his youth, when in the bath or by some other accidental touch, he was overtaken for the first time in his life by the sign of manhood, by the surprising sensation of this increased blood-pressure, so intimate and imperious; and he felt rather shy about it. His childish fancy had often imagined it in some form or other; but this surpassed everything, and was so unexpected! Only yesterday a child, and now a man. It is the revelation of an impulsive power within us. Just as a caterpillar metamorphoses into a butterfly, and all these insects take wing, the sexually ripe young man will soon fly out on the wings of love, far from the parental roof.

Even the childish erection, this modest congestion, is felt

from the earliest years to be something agreeable. I remember the case of a tiny boy still an infant, to whom I was called for inguinal hernia; the child was crying loudly, and this rendered my work most difficult; all at once there appeared a strong childish erection, at the same moment the child was quiet and happy, greatly to the relief of the neighbours who were standing round. He stopped crying and the hernia was reduced at once.

But the adult erection is something quite different: a voluptuous glow and pulsation that takes complete control and makes the breast swell with pride. In young girls the breasts really do swell at this period of their life, and in their case the swelling remains, internally and externally. This congestive delight may best be compared with the astonishing sensation in a hot bath, or the stimulating reaction after a cold one. The pulsation is not only local; for all our pulses beat, all our nerves are stimulated from delight, the whole spinal marrow is in ecstasy.

Only after a shorter or longer period the blood-vessels in erection gradually resume their normal working; and this in consequence of other impressions or simply as a manifestation of fatigue. And yet at the slightest excitement the same process is repeated.

It is just this game of ebb and flow in our vascular system, that has such a beneficial effect, in contrast to stagnation. We notice, as we have already observed on page 207 a certain periodicity in this flow of blood. In the morning, when we begin the duties of the day, the blood chiefly flows to those organs which we use most in our work: to our brain if we have plans to make, to our muscles when we carry out our plans. When lunch-time comes, our stomach and intestines require our maximum blood-pressure to ensure thorough digestion, and after the meal our brain is sluggish and sleepy, as it ought to be. And at night, when all other organs are at rest and therefore require no increased blood-pressure, the blood flows further down, and the same congestion takes place at the other pole of our body, the genital system.

As we observed on page 205 it is just this periodicity that renders it possible for our body not to wear away, like a machine does with use, but on the contrary to renew its

strength in the rest-periods, so that our living organs are always the readier for use, the more we exercise them.

We can best see what an important part this ebb and flow plays in our life, from the suffering that generally occurs, when erection disappears owing to advanced age. The well-known abdominal disorders then appear with venous stasis and a sluggish circulation, such as piles, hypertrophy of the prostate, hypochondria and constipation. The remedy furnishes the best proof. All these disturbances are best counteracted if we replace the failing erection in good time by stimulation of the circulation in other ways, such as: walks, home-gymnastics, massage, cold-water treatment, and stimulation of every sphere of our body. By using such substitutes we can keep young for a long while.

The sexual erection has also another quite special task to perform. In the lower species of animals with their limited brain capacity, this strong erection does not exist; it is only amongst the highest categories, on account of their immense brain power, that this counterpoise is necessary. Especially in man, because his triumph in the struggle for existence depends chiefly on his higher mental faculties. Thus the object of our whole life is the maintenance of this mental efficiency. All our beverages such as coffee, tea, cocoa, alcohol etc., are only enjoyable because they specially stimulate these faculties. They cause a dilation of the bloodvessels of our brain, and the increased blood-pressure renders us lively.

And what drug have we at our disposal, capable of diverting the blood from the brain if necessary? Not one! Even if we offered a fortune for it, it does not exist. Cold applied locally to the head, rest for the brain, energetic exercise of the muscles, all these may bring us a little relief in this respect; but above all we may be involuntarily rescued by erection, especially at night, which diverts the greater part of the blood-pressure to the opposite pole of the body.

When this occurs, it is so beneficial, that quite apart from any associated thoughts of sexual things, it fills us with pleasure. Erection is one of the most important phenomena of life; and the more so, the more highly the brain is developed.

It is on that account that total impotence is so serious a disorder, and eunuchs are so greatly to be pitied. But even

under normal conditions, as soon as this counterpoise fails owing to advanced age, we often see cases of the bursting of blood-vessels in the brain, which leads to apoplexy or attacks of paralysis whenever one of the cerebral vessels, which has become brittle through arterio-sclerosis, gives way. For the circulation has lost its regulator, and this loss becomes more and more painfully noticeable until finally the circulation ceases altogether.

We best realized how greatly this feeling of manly strength filled us with energy and pleasurable sensations in our adolescence, when for the first time one night, the reaction came as great a surprise to us as the joy of the ecstasy itself.

After the pleasant surprise of the first voluptuous sensation, and after these feelings had been experienced several times, we found to our great dismay, one morning on waking up, that half in sleep and half in a dream, the whole structure of our manly strength had collapsed like a house of cards, only leaving a sad memory as of tears behind. Our ecstasy had vanished into thin air, and we felt once again like a pining babe. And how glad we were, when after a little time our manly vigor blossomed forth again, as though nothing had happened!

I should here like to give a little good advice. If you want to remain young a long time, you must never purposely hasten this natural catastrophe. Do not awaken the next period of life too soon through intentional increase of the sexual stimulus, the period of sexual activity, that we are next going to describe. Husband your strength, so that only in due time your entire physical and mental faculties may reach their full development, and your sexual life may attain its full power. And even if at the present time the sexual urge is sometimes felt to be overwhelming, stand firm, and be glad of it; it is only now that the whole magic world of expansion will really reach its maximal point.

This period of our life is certainly the most difficult one of our whole existence. After the depression and apathy of the period just before puberty, which are sufficiently evident to every teacher, there succeeds a period of increased excitability, of exaltation, of enthusiasm, which often leads to remonstrance from the superiors. Especially in the case of young people

who suffer from neurasthenia or a weak heart, these powerful impulses and sudden transitions are very hard to bear; and it is still worse if they are already in the habit of masturbation or addicted to alcohol or tobacco. Certain signs of fatigue, exhaustion and over-tension are often displayed, which may lead to a loss of all interest in life, so that at this critical period cases of suicide are frequent.

This ill-humour in adolescence may easily be confused with the depression consequent on prolonged abstinence at the adult period. It might be thought that the state of things would improve if sexual intercourse were allowed during the years of puberty. But that is not the case. On the contrary, if sexual desire is found too fatiguing, sexual activity would only aggravate matters.

It is most necessary duly to recognize the painful situation of young people, and to show them all affection and sympathy. Everything that can make them happier and increase their strength at this time of their lives, will comfort them. It is most important to calm the psychic nature, and to avoid mental strain and overwork. And it is a cruel wrong that just at this critical age, young people in schools and colleges especially, are almost always so crammed and wearied and fatigued, both by sitting too long and by over-study, while those of the poorer classes are often industrially exploited at the same age.

The real cause of all these unpleasant sensations lies far more often in our training than in the sexual life itself; but even if human society were so well organized and our training so healthful that the sexual urge and all sexual activity could occur at the same age, still, as we have explained in Chap. 40, the sudden change, from the vegetative to the sexual life-period must always be a crucial moment in our lives.

In the foregoing lines, we have only been speaking of the young man. The grown girl feels these increases of blood-pressure more intimately, and often far more deeply than he. But what she feels, she does not understand, she dare not understand it, and no one dares to explain it to her. Only the doctor knows what is the matter with her . . . but when he is called in, it is really too late, and the opportunity of explaining to her and sympathising with her has gone by.

Special care should be taken that the young girl is strong and provided with good powers of resistance at this critical age. For any neglect at this time cannot be repaired later on; even the preparations of iron that one would so gladly prescribe as a remedy for her anaemia, may increase the loss of blood at her monthly periods.

56. *The Summit of our Life-energy.*

The nearer we approach maturity, the more powerfully does the sexual urge make itself felt, with constantly renewed intensity. For it is not in this case a question of an avoidable stimulation of one of the senses, but of an urge materially founded on a secretory function that cannot be evaded. No matter how much our attention may be diverted from it, or how much we may be taken up by our business, the urge always returns relentlessly, systematically, and with increased intensity, exciting us each time to an extreme degree.

At first it was sufficient for us to expend our energy on other objects. If we were able at that time to avoid all accidental causes of sexual stimulation, the sexual urge did not become too overwhelming; although it soon cropped up again. Although the urge might have been very impetuous for a moment, if we did not give way to it, we remained master of our passions, and soon felt quite calm in our minds again.

But the stronger the physical constitution becomes in adult-life, the more the tension in the seminal vesicles increases, and the more the blood is stimulated by the presence of the hormones. This stimulation gives us no peace day or night; there are only short pauses, after which we feel doubly tortured and almost driven to despair.

After all it is surprising that such an excessive stasis of the circulation does not torture us still more! How great the pain can be if local blood pressure is ever so slightly increased through local inflammation; for in an inflammation with its climax: *rubor, calor, dolor, tumor* (redness, heat, pain and swelling), it is just the increased blood-pressure that causes the pain. And how desperately a little inflammation at one of our finger-tips or in the pulp of one of our molars may pain us. We have no rest night or day while it lasts.

So it finally happens, earlier with some people and later with others, that this same congestive tension, which so charmed and delighted us at first, becomes through its excessive increase so great, and so painful; feels so overwhelming and constantly more of a burden. At first the increasing

tension caused feelings of pleasure, and the relief of tension was a disappointment; henceforward our only desire is to be freed from this troublesome impulse . . . it is this liberation that would now afford us the greatest pleasure.

The accomplishment of the physiological function has now become a necessity, and this urge is henceforward felt to be more imperative than any other has ever been. That which we considered in Part II as a play of muscular antagonism, we now only feel in the heat of the conflict as a psychic antagonism.

Shall we yield to this urge? The reader will remember the picture of the child who struggled in vain against the impulse of Nature (page 108). Unfortunately it is so in this case, for on the one hand the urge is so overpowering, and on the other the contra-indications which forbid us to yield may be so definite.

It is a conflict into which we shall always be drawn again and again, no matter how absorbing our other occupations may be. It often happens in that we are so mastered by it in the midst of our work, that it is absolutely impossible for us to collect our thoughts and concentrate our attention on one point; and it is worst of all at night, just when we should rest. We have to fight the hardest battle in the solitude of the night, and without being able to expend our energy on any kind of work. This silent suffering undermines our psychical strength.

Silent suffering — for if we tried to express it like animals, — the cries of our domestic animals for instance, — we should only make it worse. So we keep silence; and if we hear the cry of our domestic animals, it goes to our hearts; for as we are related to every living creature, we understand their language; but because we are afraid of betraying our feelings, we prefer to mock at the sufferings of these poor creatures. For no one troubles his head about us, if abstinence ruins us.

It is a hard fight. It disturbed our psychic life from the first, but now that the fire is burning so near us, it becomes really too bad, and we want to be freed from the torture. But how?

Masturbation is too childish, too messy, too silly, and does not satisfy our minds or our longing for sympathy and

affection. The idea of prostitution is repellent to us, that is still worse than masturbation; and we are too valuable to risk the loss of our honour and our health in a single night. But what shall we do then?

Now we come to regard nocturnal emissions in quite a different light from what we did formerly, when they were such a disagreeable surprise.

If everyone is so cruel to us now, and the remedy for which we long so intensely is kept from us, nature is far kinder to us than even our dearest relatives. Right and duty are categorical, but under the veil of night, nature gently lends us her aid, and affords us in pleasant dreams, even if only for a short time, the relief that we need so greatly. How desperate however must our condition become, before this relief occurs!

Nor is that what we really require. We should like to run up the entire scale of passionate enjoyment with a chosen kindred spirit in full consciousness, in our waking hours, and not dimly in our sleep; we want to be able fully to express all that we feel so passionately.

It is no light task to find the ideal person and to get used to one another. It is easy enough to enter on a casual relationship, but what grave complications may result! And if we once begin with that sort of thing . . . We want to be permanently happy, we want to attain the height of happiness, and that takes time, and requires much self-control, until the happy time comes when we can yield body and soul to our partner without anxiety or regret.

That is the most beautiful task of our lives, the climax of the development of our energy. No sacrifice is too great if we can only attain this ideal. To get on in the world, to win each other, to build a nest together and found a family. So it is sexual passion that arouses in us all the chivalrous virtues; it encourages us to devote ourselves to loving duties, which will constantly grow with the realization of our ideal in the bosom of the family.

Hunger makes us selfish, but love binds us together in delight. Love is the most beautiful virtue, the source of all the higher qualities.

57. Harmonious Satisfaction and its Psychic Hindrances.

The most stupid people are always those who think that they know everything. Most people who get married think that they have nothing to learn about it, that Nature points out the right way. They do not understand that they now have a great deal to learn.

Those couples who have anticipated things during their engagement, are still worse off. They were no doubt in the right mood at that time, unusually so in fact, but then their happiness was spoiled, because they were so anxious, so nervous, so afraid of being discovered, and also rather worried over possible consequences. None of these things tended to increase their pleasure, but rather thoroughly to destroy all the more intimate enjoyment. That was the first disappointment; and yet for this, they had run so many risks!

Afterwards, when they are married, everything will run more smoothly, they think; but very often it takes some time before they are able to give full expression to their passion. We may think of a new-born babe, who certainly feels hungry enough, but must practise long at his mother's breast, before the satisfying of his hunger becomes a delight! So that is the second disappointment.

Later on we have made such progress that we think we have become expert, and it all becomes a matter of habit, and so humdrum that we scarcely give ourselves the trouble to rouse one another to the right mood. That is the third disappointment; and the saddest, because it so often becomes permanent, and perhaps even progressive.

How sad this latter disappointment is, I will endeavour to show more clearly by an example taken from the way we eat; for eating is also a fundamental and impulsive need. We see how a wild animal gulps down his booty, how an ape crams everything into its mouth, how voraciously a boor eats, although they all know that as soon as the meal is over the taste disappears, it is an unlovely spectacle. — But now let us see, how differently they do things in a decent family. The careful housewife has taken no end of pains all the morning to get

everything ready punctually and in the best of order; the table is set as for a feast; everyone has his own plate, so that he can take his food in small pieces, separately or mixed, just as he fancies. The different dishes are tasted with care and attention, as long as possible before swallowing the mouthfuls.

And now we come to the question of love. With the lower animals copulation is an attack, a sort of outrage. Think how in our farmyard, the cock, generally so stately, suddenly forgets his dignity and pounces upon one of his hens, just like a bird of prey. And amongst the most uncultured peoples the gentle art of making love is unknown; they have their intercourse, and that's an end of it.

This is very annoying, especially for the wife. Because, as we saw in Chap. 22, her function in the procreative act is entirely different from that of the husband, she requires a much longer time than a man for her congestive function to reach full activity, and it also takes much longer for her to reach the orgasm, the turning point at which the convulsively increased stimulation abruptly changes to an agreeable release of tension. The traditional politeness, which permits ladies to go first, is only manifested in public and as a meaningless conventionality, but not in this case, where it really matters; for this takes place privately, where no formalities are required. And so many wives are deprived of this* greatest of all delights.

But the wife may, in the most leisurely manner, gradually work up to her full ecstasy with the method of coitus known as "Karezza" or Zugassent's discovery, which we fully described in footnote to page 135, a method in which one can revel in pleasurable sensations as long as one likes, because the final climax is indefinitely postponed.

This karezza-method is also scientifically most interesting, because it is a proof that even when a woman does not experience any abrupt climax to her ecstasy (see page 136), she still may feel much enjoyment in coitus**. And many

* Later on, when he has grown old, she takes her revenge. When on account of his advancing years, he is less easily stimulated, she will not take the trouble to meet him half-way, and help him to the right mood for enjoyment.

** So children at a party may laugh most heartily, or even immoderately, without laughter turning to tears (see page 131).

husbands find it most convenient, if their wives remain quite passive and leave the unconditional management entirely to them.

But it also happens occasionally that even when plenty of time is given the wife, many of them not only fail to reach the climax, but do not experience the slightest pleasure in the act of coitus.

That this frigidity should be so general in women, is certainly due to the fact that in the female organism the secretory function is much less prominent, and also depends on the many anti-selective influences of remote and ancient origin. Every girl who shows a passionate nature runs the great danger of being seduced and brought to misery, after which she feels a horror of men; or the risk of venereal disease, or despair or prostitution or even suicide excludes the majority of them from reproduction. Thus they are the victims of man's lack of conscience, and men then grumble at the frigidity of the other women.

This danger that threatens the passionate girl is doubly injurious in the sense that parents and guardians feel themselves called upon in the face of it, to repress her sexuality and to keep her as ignorant as possible of all sexual things; an antisexual education that is only too successful in the case of girls on account of the hidden situation of their genitalia. For if these organs are never subjected to local stimulation (see page 323) how can local sensation attain its full development?

But on the other hand this local sensitiveness can be greatly dulled through the brutal excitement of masturbation. Whenever women or young girls have come to consult me for loss of sensitiveness, I have asked them: "but when you were a little girl and touched yourself there, did you not feel anything?" and the answer was always that they had done so. In these cases the loss of sensation is not absolute, and improves in time.

For that which has been lost through perverted habits, can be regained through good ones. Meanwhile she must be content with a simply altruistic feeling of pleasure, i. e. with the satisfaction of giving her husband the joy of voluptuous sensations.

And the disappointment of the impotent man arises not

so much from the fact that he feels no pleasure himself, for he does not miss it; but rather because he cannot afford his wife the satisfaction that she so greatly longs for, at least not by ordinary coitus. This "non possumus" does not exist for the frigid wife in her relations with her husband; for she demands nothing for herself, she is much more frequently ready to satisfy his desires, she does not even need to be excited and brought into the congestive mood. And this altruistic mutual aid may be most sympathetically felt by both, if the flame of psychic love burns high at the sacrifice.

Even in desperate cases this lack of feeling may later disappear. I remember the case of a married woman, who told me that she had had absolutely no sensation for the first two years of her married life, and yet had had two children during that time. She became pregnant for the third time, but had a miscarriage, and during her convalescence suddenly became aware that she felt the sensation. Was it only because Nature had endowed her so tardily with those feelings that other young women often feel prematurely? Or was it awakened by the long rest in a warm bed, coupled with good nursing and kind treatment? Or was she so pleased with her recovery, now that she was free from the terrible fear of pregnancy, that haunting spectre which had paralysed her at coitus.

One thing is certain, henceforward she adopted preventive measures, and her subsequent conjugal life was very happy.

We should not be surprised that so many married women experience so little pleasure, because it is generally the husband who takes the initiative and always chooses the most favorable moment for himself. How humiliated he would feel if she were to take the initiative for once, and what a long time he would need to recover from his surprise. Even in the first love-proposals the man always thinks it is his privilege to take the initiative.

It is still more unfortunate that the wife is nearly always allotted the less advantageous position in the act of coitus, which renders freedom of movement almost impossible for her at the critical moment. But if just for once, this traditional position is reversed, and the husband lies underneath, so that the under-surface of his penis glides along in her vulva instead

of the whole member entering the vagina, then she can be mistress of the situation, for once. She can now take as much time as she wishes, almost or quite independent of the question whether the husband is ready or not; she can now adjust the rate of movement to a nicety and reach the climax at the moment which suits her best. It is not difficult for the husband, lying in this position, to delay his orgasm, and as soon as it is his turn, to resume the position which is most convenient for him.

The secret of this inverted method of coitus lies in the fact that in ordinary coitus, on account of the inconvenient situation of the genital organs (see page 153) and still more if the wife is inclined to be fat, the clitoris is not rubbed or touched in the correct manner, and sometimes not at all.*

Now all remains as before (see page 154) inasmuch as the husband presses his legs together, while the wife spreads hers as wide as possible. This method can also always be used as a supplementary one, if the husband has had his satisfaction too quickly. Indeed, if the husband is completely impotent, this method is always at least as satisfactory as the homosexual mutual coitus of two women.

The ideal, that the climax should be reached by both partners at the same instant, is a rare occurrence, and this makes no difference to the voluptuous sensation. Nor is coincidence an indispensable condition of conception, if conception is desired.

Generally speaking, it would be much better, if the husband had enough regard for his wife's feelings, only to approach her when he noticed that she was in the right mood, which he can easily ensure by kind words or by caressing her generally or locally. The charm of love should be conjured up afresh each time. And this is the more successful the more the couple get accustomed to each other day by day.

* That is why ERNST KLOTZ, in his book "Man the Enigma" (Das Welträtsel Mensch) pub. Giesecke, Dresden, 1921, says that vaginal coitus should always be effected with the woman on all fours, as was originally the case with all of the higher animals, so that the clitoris should not be crushed by the hard upper-surface of the penis, put gently rubbed by its under-surface, where the urethra projects like a soft ridge between two hard edges (see pp. 66 and 72).

Every person has one or more erotically sensitive spots on the surface of his body, or there is some kind of handling or tickling that arouses his desire; and in the same way he finds that certain influences are destructive to these feelings and cause the ecstasy to disappear immediately. As erogenic spots I may specially mention the lips, the tongue, the nipples, the buttocks, the urethral orifice and the external genitals; and as erotic stimuli; stroking, pinching, scratching; or kissing, biting, licking, sucking, etc. These individual peculiarities do not simply originate from mere accidental experiences or from associations of thought or feeling, but go back to reminiscences of childhood, or even more remote periods of animal evolution, something like the mimicry to which DARWIN has alluded.

Here there is room for a great deal of improvement before the actual state of the highest love will be so idealized that painter and sculptor, poet and composer can give worthy expression to this theme; just as they now depict a family festival or the loving attitudes of an engaged couple.

The magic charm that emanates from odours and perfumes may have a very direct and seductive effect. It is indeed a fixed law, that the shorter the distance from which our senses receive an impression, the more intimately will our consciousness perceive it. Our eyes and ears often receive impressions from a great distance; but we can only perceive odours when they are quite close. In animals the sense of smell is only surpassed by the sense of taste. But the climax is represented by the feeling of being touched intimately. Odours have a very different effect on various individuals. Strong and penetrating perfumes (see page 84) have the most exciting effect on people of a coarse nature; for more highly refined persons however, the fresh smell of clean clothing has greater effect.

We come now to the great difficulty that generally stands in the way of harmonious satisfaction. Individual peculiarities differ far more in the psychic respect than in the material, and yet people long so greatly to afford each other the most wonderful ecstasy. One man needs jollity, gaiety, another seriousness or even a sickly sentimentality, in order to obtain the desired effect. Some people give vent at the last moment to coarse and immoral, or even indecent expressions; and there are men and women too, who cannot feel satisfied until

they have caused their partner or themselves a little pain. In most cases however, gentle caresses are far more effective, just as a slight tickling on the soles of our feet drives us crazy, while a rough touch has no effect, or makes us cross.

All these individual differences are subject to the influence of temperament, habit, age and traditional associations; besides which they constantly change with the mood and circumstances of the moment. How greatly for instance, alcoholic drinks can influence our moods and lead us astray. How difficult it is to come to a harmonious agreement in this condition, because we do not even understand ourselves properly, and our intellect deserts us. Words are useless, and the only expression of our feelings is an unconscious sigh, either of disappointment or of passion.

It is only when we reflect on all this that we can begin properly to understand the great mystery of individual love; why should it be he, and no other man? or why she, and no other woman? Why do these two souls seem so adapted to each other? Yes indeed, we must even wonder that two congenial souls can find each other at all. In most cases people are led to love each other through a gradual getting used to each other that takes years, but sometimes through a sudden overwhelming rush of sympathy. The latter is indeed the more romantic, but the former is more likely to ensure lasting conjugal happiness. More cultured people insist on a long engagement before binding themselves by marriage for their whole life.

And in marriage, the longer the partners have shared joy and sorrow, the more harmoniously will they agree. Sexual intercourse then becomes more and more a harmonious satisfaction and as they get older is found more agreeable and beneficial, than each new liaison, even if longed for eagerly, as a new charm. And who knows how harmful such temerity may prove to us, just on account of its unwonted charm.

Finally, with the advance of years, there comes a time when ordinary marital intercourse becomes too fatiguing and trying for us; and then we reach a period in which we still perceive the sexual urge and feel it to be highly agreeable, because it makes feel so young and lively once again, — but

if we yield to it we feel exhausted, enervated, disappointed, and doubly aged!

So we have gradually reached a similar transitory period, as once when we were young (see page 331), and we used to feel the urge as something so agreeable, and the satisfaction as a disappointment. The ideal of the full love-life must now yield to the ideal of asceticism, and henceforth we feel better if we restrict ourselves as much as possible.

At both of these transitory periods in our lives the procreative act appears to us to be a squandering of strength, an improper expression because after the act is accomplished we feel ourselves tired, exhausted and nervous, while at the time when our manly strength is at its height, we feel calm and content after each normal connection, as though our strength were renewed.

To be able to judge in each particular case, which is the more indicated and beneficial to our psychic life, sexual abstinence or the manifestation of mutual affection, demands more tact and delicacy than most people possess. Formerly this was much worse, when the majority of married couples behaved far more thoughtlessly and inconsiderately towards each other than they do now. But in modern times, with our higher differentiation (see Chap. 49), we pay more attention in married life to the ethical significance of our actions, and feel our responsibility to each other more strongly. It is greatly to the credit of those who preach abstinence that they draw attention to this sphere by their criticisms; it is only a pity that they often speak in such a dogmatic and stereotyped manner, and do not take the various ages and individual differences into due consideration.

There will be no fundamental improvement until woman is more conscious than at present of her full value as an individual.

58. *Different Degrees of Sexuality.*

Anyone who has carefully and observantly read the foregoing chapter, will surely have come to the conclusion that there are many more degrees and shades of sexuality in our love life, than he suspected. Our sexual impulses are so manifold and different, that it is sometimes scarcely possible for us to distinguish one from the other; and how many errors, misunderstandings and false judgments result! I will therefore try to define some notions more precisely; many an obscure point will thus be cleared up.

In our sexual behaviour we can give expression to our affections more sexually or less sexually, and this may be shown in an ascending scale, from the most harmless caresses tho the most fateful manoeuvres, e. g. —

a friendly hand-shake,
a tender kiss,
going arm-in-arm,
a very affectionate embrace,
passionate lovemaking,
local feeling and tickling,
satisfaction through external caresses,
Karezza,
intercourse with preventives,
attempts to fecundate.

Each of us would fix the limit, where according to his ideas of propriety, familiarity should end, at a different point in the scale for each particular case.

We also know full well, from history and ethnography, that the higher we ascend in the scale of civilization, the more recognition of intermediate stages we meet with. The greater the progress made by self-control, the more we can and should really admit some of these degrees on the scale to be quite harmless and ethically permissible. Thus our sexual life will be constantly richer, proportionally with our self-control (see Chap. 30), for each of these steps has its own particular value.

But the picture will be still more complete, if we regard not only the actual behaviour, but the inmost feelings. Then we obtain a still more plentifully graded series of sensations on the scale, from an icy frigidity to erotic frenzy. It is to

be regretted that our own language so often fails us in this matter, and that we are then obliged to borrow foreign terms to express the finer shades of meaning; not merely from a false shame, but as an enrichment of our vocabulary.

Let us take for instance the word "sexual" (*sexeuall*), that is a foreign word in itself, instead of saying: "passionate in a sexual (*sexflechtlich*) respect". How much is included under this one term "sexual", that has quite another meaning, and must therefore be judged in quite a different manner.

If in speaking of anyone, we say he is *sexual*, we generally mean that he has an obvious sexual need. But we criticize this in quite a different manner, according as it happens to affect us sympathetically or objectionably. If I find it in the case in point to be something agreeable, I say: he or she has a warm disposition, is very affectionate, at most I say he is lively, high-spirited, rather inclined to be gay or careless, etc. If however, it makes an unpleasant impression on me, I say: this person is annoying, or rude, or impudent, or I use some still less complimentary epithet.

If however, we are speaking of some one who only feels the sexual urge to a very slight degree; we say, if it meets with our approbation, this person is very proper, modest and moral; if it does not suit our ideas, we talk of indifference, coldness or frigidity, obstinacy and asexuality.

The same sexual behavior may really represent a totally different ethical value. If for instance chastity is the result of a feebly expressed sexuality coupled with a feebly expressed will-power; then this chastity betokens a deficiency, and may cause great disappointment in married life. If on the other hand it is the result of iron self-control exercised with a strong will over a passionate nature, then this chastity is the highest of all virtues.

Frequently also, my judgment must vary with my mood. If I am feeling very sexual, and have on that account to sustain a hard fight with my passions, I can scarcely bear an expression of liveliness: if however I am old, and still would like to be stimulated for a bit, then something daring or even cynical would delight me.

This point of view may vary from time to time with the same person. Suppose that just for a moment one wishes to

have a joke; the more one notices that one has gone a little too far, the more reserved one would naturally be the next time. And then someone would say, quite unjustly: yes, he's only pretending, the hypocrite, last time he was not so pious.

One must not always show one's true nature, especially in the sexual sphere; this lack of frankness is often a duty of self-control. For instance, as soon as a girl shows openly how much she feels the need of sexual satisfaction, this frankness is only too quickly taken advantage of; even if only in words or in external behaviour towards her. And so in future she would be obliged to be doubly careful. I have often observed among young people, that it was just those who felt the sexual urge the most, who exercised the greatest self-control and appeared the coolest; while on the contrary, those who were asexual, tried to hide this defect by impudence.

If a man marries such a forward girl expecting to find a very passionate nature, he is terribly deceived.

If anyone incidentally seeks the sexual, it is not necessarily a sign of a deeply felt sexual need; the motives may easily be curiosity, coquetry, vanity, ambition, love of adventure or speculation about marriage, all motives of a mental order, that have nothing to do with the sexual urge. And this may lead us into serious error.

Also people with a southern or oriental temperament, who have very lively and active habits, might easily give the impression that they are fearfully sexually inclined; while although we, in our colder climate, are less demonstrative, we perhaps feel passion more deeply and permanently.

These various examples show us how difficult it is for each of us to fix a standard of living for himself in this respect, and still more so to judge others. Especially in the sexual sphere we should remember the warning: "Judge not!"

59. *Hetero-, Homo- and Ambisexuality.*

Just as the majority of us feel ourselves sexually attracted to persons of the *opposite* sex (heterosexuality), so also there are men and women who feel attracted, with equally pure and lofty motives, to members of their own sex (homosexuality).

In this chapter we are not referring to those cases in which persons seek their sexual satisfaction with others of the same sex on purpose as an exceptional experiment, or because there is no member of the opposite sex available. We are now dealing exclusively with those persons in whom this individual peculiarity is deeply rooted in their mentality, either inborn, strictly speaking, or as such a direct consequence of influences to which they have been subjected in their early childhood, that it can hardly be distinguished from an inborn tendency. This preference for one's own sex may indeed be so marked as to be quite exclusive, with a pronounced dislike for the opposite sex. Here it is not a case of "are there such people", but "such people certainly do exist".

It frequently happens that a hereditary tendency to this preference appears in a highly educated and honored family; and even when it only occurs in individuals, generally the persons concerned are of a high intellectual order and idealists, such as literary men or very sensitive women (pp. 318/19). In the hey-day of ancient Greek civilization it was the higher intellectuals in particular, who sang the praises of this homosexual ideal (p. 318/19).

But just as in those days in ancient Greece, even nowadays the direction of the impulse is not always absolutely exclusive, and thus we can understand that even now some high-class, idealistic persons display this psychic peculiarity. For in people of a coarser and more realistic nature, raw materialism in their sexual intercourse manifests itself in an increasing measure as time goes on, and in this case, as we explained in page 163, the ordinary, heterosexual connection is more indicated. But the more refined natures, in whom the heart speaks, and love is of a more spiritual character, are not so eager for this mode of satisfaction.

Ordinary coitus often seems to them to be too coarse, too material*, and a passionate embrace from an "affinity", a friend with a "sister soul", whom they feel very fond of, appeals to them as far more ideal. Persons with such lofty ideas are also called "Urnings" "Uranians"** (from Uranos = heaven), because they feel just as much as we do, that their love has something heavenly about it.

If there were no such powerful organo-chemical (see Chap. 4) physiological (Chap. 29) and psychological (see Chap. 53) motives, by reason of which each new generation is formed again heterosexually, we should fully expect everybody to be homosexual. For a man would understand sooner than a woman what a man requires; and a woman too, would feel sooner than a man, what a woman feels. And not only all the material obstacles that we mentioned in Chap. 27, but also many of the psychic hindrances which we mentioned in Chap. 57 are non-existent in these cases.

In such a case heterosexual intercourse could only be maintained as an exception for the purpose of increasing the population.

Some people imagine that a homosexual union must be the sovereign remedy for the traditional idea that in married life, one of the partners must always be overbearing and the other subservient, or even a "house drudge". This hope is however not always fulfilled, for I have always observed in homosexual unions the same rough method employed to

* This is especially evident in the case of female homosexuals, because in the female sex the emotional is always felt much less than some local stimulation, and in their case the genital apparatus is not always by any means the preferred erogenous region. Many male homosexuals feel the same, and it cannot be denied that they resemble the female type in that respect. (See also pp. 318/19.)

** This name is very descriptive, and therefore of practical value; we know at once that a *propensity* is meant, that lies in the depths of the individual constellation. Scientifically, the word homosexual means the same thing. The popular idea of the meaning of the word "homosexual" however, is that it signifies in general any kind of sexual act between two persons of the same sex, even if only occasional moods, fancies, attempts at seduction, etc., are concerned. Thus the greatest confusion and a quite unmerited condemnation has arisen, frequently only because such diametrically opposite things have been included under one and the same name.

settle the question in a practical manner, as to which shall take the upper hand. It also often lies in human variability, to which we shall now refer.

In young children the propensity has not yet sufficiently differentiated, the specific organo-chemical substances especially, are not formed, and therefore cannot yet exercise their special stimulation. Even if our children were hereditarily or anatomically inclined to be homosexual, (see appendices to Chap. 3 and 4), we should not readily notice it at this early age. For if a child cherishes a special affection for a person of the other sex, we only think it to be friendship; how much more then would affection for a person of the child's own sex be regarded as purely friendship!

At the age of puberty both homo- and heterosexuals are traditionally and conventionally obliged to conceal and dissimulate their newly-born passions. Only when he has grown up and the heterosexuals are celebrating their engagement, the homosexual must persist in his hypocrisy, for the two paths now separate. And just on account of this secrecy, everyone thinks, ourselves included, that this propensity is extremely uncommon.

We should now expect, that this peculiarity, which does no harm to anyone, would not be objected to; for although we do not share this feeling, we should at any rate respect it. But unfortunately we are not living in a tolerant age; and it is just this intolerance which renders their unfortunate propensity an endless source of misery for these persons.

Formerly, e. g. in the hey-day of Greek civilization, when people had not departed so dogmatically from the simple natural feelings*, this particular disposition was held in the highest esteem amongst the upper classes. Intercourse with women, of whom only a very few, courtesans like Aspasia, had enjoyed the advantages of a higher education, they considered to be a mere gratification of an animal instinct; while friendly intercourse with celebrated men and youths distinguished by their beauty and talents, was thought by the aristocracy to be far more aesthetic and refined.

But times change. Rigid asceticism has spread over Europe

* Homosexuality is very common amongst animals.

from the East. I have often observed in my own practice, that the very men who have seduced many young girls, are the first to throw stones at the homosexuals, as if to excuse themselves — they at least, they say, have been "natural". And so also was the nation that repeatedly denied the moral worship of Jehovah, and made the worship of Baal and Astarte so profitable to the priests. This was the nation that became so boastful in its moral darkness, when in a terrible catastrophe of nature a few homosexual persons also came to an untimely end!

The only heterosexual worthy man who was saved because he was so worthy, although his equally heterosexual wife perished with the rest, was later consoled for the loss of his wife by heterosexual intercourse with his own two daughters, both of whom he rendered pregnant!

We are simply astonished, are we not, at such sexual excellence in these three persons who were rescued!

In their piety and fanaticism, the priests of the middle ages blew upon the smouldering ashes of Sodom and Gomorrha. They decreed burning at the stake to be the penalty for three acts which are really not at all wicked: heresy, witchcraft, and homosexuality; three hobgoblins to the priests' minds!

Through the same fanaticism on the part of the Protestants in Holland, Mynheer von Faan, of Groningen in 1731, tried 24 people living within his jurisdiction charged with homosexual practices, many of them, it was stated, unjustly. They were so terribly tortured on the rack in the effort to make them admit their guilt, that one of them died under it. On the 24th of September their sentence was read in the church and carried out on the same day; three were burnt alive, i. e. roasted in the flames, then strangled and further burnt to ashes, eighteen were strangled first and burnt afterwards, and the other two imprisoned for life.

Even at the present time the statutes of many countries display the same intolerance. While in Germany up to the present only male homosexuality has been punishable by law, both male and female homosexuality are punishable in Austria. In the French penal code homosexual practices in themselves are not prohibited; only all vice in general which takes place either publicly (even if under the eyes of one single person),

or with violence, or is practised on a minor under a certain age. Neither is homosexual intercourse in itself punishable in Holland, unless it takes place between a major and a minor.

This intolerance not only affects individuals who may be on occasion accused and condemned, but the disgrace is attached to all homosexual persons, because they are thus forced to concealment and hypocrisy. The consciousness of how severely they would be judged by public opinion if the matter were only known, demoralises them extremely. And all that only because they have not the same inclinations as other people.

EDWARD CARPENTER affords us a deeper insight into the significance of homosexuality in his essay on "*Homogenic Love*". In our modern social organization, says he, we cherish our tenderest feelings of sympathy almost exclusively for the opposite sex; we are too jealous and fearful of competition, with persons of our own sex. If we would only take a lesson from the homosexuals, and feel sympathetically towards those of our own sex, how greatly would our sense of solidarity be increased.

We often express pity for homosexual persons, as if they were hampered in their choice for their intimate attachments; but we totally forget that we heterosexuals are equally hampered. It is just as if right-handed people should pity the left-handed ones; but those people who are as clever with their left hand as with the right, i. e. who are *ambidextrous*, may claim to occupy a higher place.

Who knows if the time will not also come one day, when the highest class of people will be *ambisexual*, feeling affection for both sexes alike, according to the agreement and harmony of their characters, and not always considering the difference of sex as the cardinal point. When they will not be in love with the sex, but will feel attracted by personal human sympathy. Only then such highly gifted people would have the right to despise us ordinary heterosexual mortals as they would the homosexuals, on account of our limitations.

From a scientific standpoint the homosexual question is of great importance to us all. It is only through it that we can obtain a correct insight into the position that we ourselves occupy in the sexual world.

As we have seen in Part IV, one of the most primitive stages in the great scale of the evolution of species is hermaphroditism, or bisexuality. We have also seen at the end of Chap 3, that individually there was a stage in the beginning of our own embryonic formation, when we were all to some extent, bisexual. Our sexual organs have only differentiated later on in our foetal development in the uterus, so that finally, at the age of puberty, each person has become a separate individuality in one or the other of the two sexes.

Still this differentiation is not absolute. For instance, every woman has a clitoris as though she were a man, and every man nipples on the breasts, as if he were a woman. And internally as well, some rudiments of the excretory system of the opposite sex persist in each of us. Indeed, in some exceptional cases (see pp. 25 and 34), testicular and ovarian tissues have been found mingled in the same individual.

So there exists a mingling of both sexes in us; just as everyone of us has originated from a mingling of the two sexes. The purely male type, and the exclusively female type, are only the two extreme ideals of an endless succession of intermediate stages.

From this point of view, the homosexuals are a most instructive and typical example of such a mixed form. They have the reproductive organs of one sex, and the sexual inclinations of the other; and at the same time they display in their choice of clothing, the way they do their hair, and in their general behaviour, an intermediate type between the two sexes. So they should be regarded as one of the most important transition phenomena between the two extreme types which we are accustomed to consider normal. Indeed in the ranks of the homosexuals, amongst both those men and women who are homosexually inclined, this same scale of degrees may be observed, of masculine or feminine personality.

But now, when we study this freak of Nature, we begin to grasp that, as has long been observed in the mental sphere, almost every person possesses a double psychic nature. A child has in its early years, absolutely no preference for persons of its own or the opposite sex, nor has it any expressed characteristics of the male or female sex. These things only gradually differentiate. And then this differentiation is never quite complete,

for we still remain human. In the personal character of every man we find traces of something that we should term rather feminine, and in every woman traces of the masculine.

But in most cases it must remain a matter of conjecture, whether it is one of innate mixed sexuality dependent on an anatomical cause (pp. 25 and 34), or of an adaptation to some particular environment or training (see Chap. 37).

The more highly our stage of civilization is developed, the more clearly the individuality of each person may be distinguished. And that is why homosexual peculiarities are more distinctly expressed in the higher civilization. It is just these minute differences which give such a variety of human types.

60. The onset of old age.

Ageing would not be a necessary phenomenon, if in the life-history of the cell there was not always a slight disproportion between wear and regeneration.

Fertilisation, and the beginning of a new individual only succeed if all the conditions are favourable. For this reason every individual begins his life with a good store of energy. In the first half of our life, the power of regeneration is more than equal to the wear and tear, so that in our youth each muscular effort leads to an increase of strength, and after a wound or a broken bone has healed, it is stronger than before the accident. But in the latter half of our life the unfavorable influences outweigh the others, and every great effort and all kinds of damage or injury leave a little deficit behind. This disproportion constantly increases, because our strength constantly decreases, until at last the decline can no longer be denied.

This decline is compensated or even more than compensated for a certain length of time, because the older we grow the more experience we possess; but there comes a time when the limit is reached.

The first of our systems to betray a decline is the sensory one, because it is here that the most delicate workings of cell-life find their expression. The sensitiveness of our feelings no longer increases from day to day, as was the case when we were young; on the contrary, our impressions become more nebulous and indefinite, something like the impressions obtained from a worn-out zinc block. On that account strong excitement should be avoided in our youth, so that we may long remain young. But when we become very old, all our nerve-cells are worn out.

We generally notice this dulling first of all in our memory; very often quite early, before anyone else suspects it. And it is very curious; it is not our earliest impressions that fade first; on the contrary, these gradually come to occupy our memory entirely; for in those early days we still enjoyed full sensitiveness. It is the later impressions of quite recent events that

are so feebly felt, that they leave no trace in our memory. If one were only old enough, one would begin to forget everything, to lose everything and to neglect everything.

And very soon it affects our finer sensory organs, which we have overworked every day of our lives; the clearness of our sight and sharpness of hearing often show signs of diminution quite early. But even our sexual apparatus, which is the last to develop, does not escape the law of gradual decline in the course of time; sexually, one becomes less sensitive, and the secretory function diminishes its activity. Whether we wish it or not, sexual intercourse, or if we are unmarried, nocturnal emissions, become much less frequent, and at the same time our breathing and circulation less vigorous. Finally there are no more spontaneous emissions during sleep; a sign that the sexual urge has ceased to be as imperative as it was at the prime of life.

The diminution of the sexual urge may occur quite early. And just as the first appearance of sexual maturity was a mile-stone in our life, when our life-curve ascended (see page 364), the first failure of this function is also an important mile-stone, but this time on the downward grade. These two events may be compared to the opening of a flower-bud and the fading of the over-blown flower.

Who does not remember the first time in his married life, when he thought after a tiring day or a lot of worry that he would like to have connection, and then he found it difficult to get an erection . . . but of course after a long absence or the usual period of rest it would be alright . . . and then he found for the first time that it was physiologically impossible for him to carry out his intention. After all, just for once it did not matter, and we were then young enough to quickly wipe out the slur, yet it was a first warning that we had to remember later on.

However, before we go more deeply into this new life-period, let us define a little more precisely the notion of sexual old-age. Once upon a time, when we looked on procreation as the main object in the sexual life (Chap. 23), and only considered sexual enjoyment as something quite secondary, old age could only be defined thus: "he is old, who can no longer reproduce his kind".

This notion was specially derogatory to the wife, for she indeed loses her fecundity at a time of life (see page 127) when she is otherwise in full vigor, and sexually, is still very excitable. But now we look upon this stage of her life as her second youth, free from the unpleasantness of menstruation and the risk of pregnancy*. But we do not call a woman old until her sexual sensibility is entirely extinguished, because we know how greatly this reacts on her entire physical and psychic constitution.

We shall now trace the history of the husband in his married life a little more in detail. At first, when he was newly married, the intercourse with his chosen bride was the greatest delight and charm. Then a little later, when they had become more used to each other, he still felt it much more beneficial, easier and more soothing than intercourse with strange women could ever be; and the older a couple grows the more they allow each other the repose that their age requires.

At last the time arrives when ordinary marital intercourse possesses too little charm to make it worth while to go to so much trouble, all the more as it may happen again, that our skill deserts us just at the critical moment; and we are not yet too old to feel ashamed of our failure, even if only in our own wife's presence. Abstinence is very often greatly encouraged by all sorts of accidental influences, such as coolness on the part of the wife, a cold bed, complicated contraceptive preparations for coitus**; and even sleeping apart in twin-beds is often a deterrent at this age.

Attempts at intercourse with other women, which at least have the charm of novelty, will be perhaps still less successful. And it will no longer be expected of him, that is, not by his former mistresses; they will poke fun at him now, and call him a played-out old man. And so gradually and imperceptibly we reach the years when we no longer need coitus, and of

* Because her sexual enjoyment may be very keen, and indeed without these hindrances, this life-period has been termed "l'âge dangereuse", but to my mind, sexually all ages are dangerous.

** One can scarcely say which persons should be the more thankful for Dr. Mensinga's invention of the occlusive pessary: newly-married women or elderly men.

our own accord choose celibacy. One man reaches this stage very early in his life, another much later, there are wide differences. Abstinence is not at first absolute, and it very often happens that from habit one ventures to indulge in sexual intercourse now and again, but only exceptionally.

Thus it can no longer be denied that such a person has arrived at the period of life, which we mentioned at the end of Chap. 57: the sexual urge is still pleasant, and its disappearance is felt to be a disappointment.

One should not complain of this. It is nonsense to run to a doctor at this age on account of loss of sexual power to ask him to make one younger. Even if the power could be entirely restored, the fact that it has sunk so low, gives us in itself the physiological proof that such disturbing emotions are to be avoided for the future. This increase of blood-pressure and this powerful stimulation of the central nervous system, which are both so important to the adult man in the prime of life for the development of his full life-energy, are really in old age most dangerous and may perhaps cause premature strokes of paralysis and degeneration of the brain.

Henceforward one chooses gentler excitements and less exacting sexual sensations, as a feeble echo of the sexual urge that was once so overpowering.

And it is much worse if the sexual impulse does not decrease with age, whilst satisfaction is still felt as too great a tax on the nerves. This is not at all a rare occurrence, because many people are only able to retire late in life. And just because one is old, one has such a desire for strong emotions, — if one could only bear them. And then instead of husbanding his strength, many a man squanders it, either by a marriage with someone quite young, which he does not long survive, or in all kinds of dissipation, which ruins him completely. For it should not be forgotten that the sexuality of elderly men is almost more dangerous than that of young people. A young man, who still has to fight his way through life, will at least stop to think before committing a foolish act; but when a man is old, his self-control only too readily deserts him, and he finds himself unexpectedly in the midst of a conflagration that he thought already extinguished, because the watchmen had gone home.

And for these reasons sexually excited elderly persons may be very dangerous for younger ones, because they are so blasé, that they require so many of the more violent stimulations which are not only distasteful and repellent to young people, but also really injurious on account of the danger of psychic contamination and exposure to seduction and debauchery.

Medical aid can be efficacious only if this stage of relative impotence happens early, when the doctor can prescribe regular habits and avoidance of excessive strain, and especially of mental strain, so that Nature may be able to gradually restore the disturbed equilibrium. The patient always thinks that the absence of the sexual urge is the primary cause of his psychical depression, whereas in reality it is almost always psychical strain or grave bodily exhaustion that is the cause of premature age. It would therefore be most unwise to prescribe aphrodisiacs; on the contrary, one should be content for the time being to avoid all sexual excitation as well as to practice self-control as explained in Part III. And on that account, especially at an advanced age, operative intervention which (even if only for a short time) restores the power of erection through the reintroduction of organo-chemical substance (see Chap. 4) on STEINACH's principle, should be avoided. And every waste of strength only makes matters worse. Only rest, and especially sexual rest, can bring relief.

If one has quite given up the regular practice of coitus due to advanced age, one may still feel the sexual urge from time to time, either during sleep or when half-awake*; not, of course, so imperiously as in former years, but rather as a welcome sensation. One still experiences the blessings of voluptuous feelings with their periodical congestions of the circulation and their psychical stimulation; but only in a milder form, something like a rejuvenescence without fatigue. These are the lovely days of sweet September that are so restful after mid-summer heat.

Now we can more easily understand the correspondence

* Especially in the morning just as we wake up, because the desire to urinate is one of the principal causes at this age (see p. 124) besides which, the complete rest one only gets in sleep, see chap. 36, is necessary in order to produce sufficient congestibility.

between this life-period and our adolescence, to which we have referred above. For then, in that first transition-period, although we had no sexual connection, the sexual urge delighted us; and at that time, just as much as now, the avoidance, as far as possible, of all powerful sexual excitement was indicated. And how greatly we developed our energy during those years! Now this second transition-period may be regarded as a renewal of youth, by means of which our riper experience of life, and our more mature judgment can bear the finest fruit. In the early days we used our experience for our own further development, and now we use it for the public good in the widest sense.

At last, with the passage of the years, we reach the final period of our life, when no congestion of the circulation occurs either day or night, either spontaneously or through any exciting cause, the disintegrating stage, in which the pangs of old age make themselves felt more and more.

61. Senile Decay.

And so we come to the last stage of human life, in which sexual stimuli find no response, while the vegetative functions continue for a time, although but feebly. This is the period of decrepitude, of senile decay.

In the male, total impotence gradually becomes the normal state. If sperm-cells are occasionally produced, they are swept away unnoticed with the urinary secretion, if the power of erection has been lost as a symptom of paralysis consequent on diminished reflex excitability (see page 126). And yet many a grey-headed old man tries to awaken his slumbering passion with alcohol and debauchery, which can only hasten the end. The wise man thinks more of his honour and resigns himself to the inevitable. He will have to do so anyway, before he is laid under the cold ground or carried to the crematorium.

If one exercises self-denial, this period of life too may be crowned with blessings. Although childhood, without any sexuality whatever, is so very charming, there is something far nobler in the repose of old age. The needs and desires of the body give place more and more to spiritual ideals one's love can now be free from material complications, with a free mind, free from all earthly considerations, an experience which is felt to be a foretaste of paradise, as though the soul were already detached from the body. Many an honourable old man, many a faithful mother, is in this way illumined by a glow of light from above; and indeed long, long after they have left us, there survives in our grateful remembrance this halo of their holy lives.

The difference in sex is no longer prominent, and this encourages confidence in many cases where the sexual formerly represented an obstacle. And the person's disposition becomes calmer and more even, more forbearing and patient, and less immoderate in joy. One does not have to go so far in search of happiness; one possesses a world of memories in oneself.

The advantages of this stage, in which one has risen superior to all the storms of life, are indeed so great that there are many people who are too proud of them, and would

like to force their own asexuality on others, although these latter were in the middle stage of their lives and at the height of their sexual activity, and should therefore still be exercising these gifts. And sexual abstinence is held up as a virtue, even as the greatest of virtues; so that the preaching of this morbid principle spoils and desecrates pure conjugal happiness.

When we are young we should be very sparing in the use of strong stimulants, and especially with sexual ones, so that we may long remain youthful, but we should not think that we attain the same end, if we suppress the sexual function as far as possible when we are grown up. On the contrary, a regular, normal and approved exercise of the sexual function tends far more to ensure a lasting preservation of one's strength.

Indolence too, only hastens old age, for one only becomes lazier; and the obesity that it occasions, makes the approach of old age all the heavier to bear. One should do everything possible in order to get a little thinner as time goes on, so as to render the work of the muscles easier, and not to hamper the heart and lungs in their functions.

The female organism also, is all the better for rest at an advanced age. With the approach of old age all the connective tissues lose their elasticity, so that not only do the charming curves of the female form disappear, but her sexual organ is no longer so well adapted for intercourse; if children have been born, it is too widely distended and flabby, and if there have been none, there is a too rigid narrowing of the orifice. All these are friendly warnings of Nature that the time for rest has come.

On page 366 we have already spoken of the pangs of old age, which make their appearance as soon as a stoppage of the sexual congestions of the circulation occurs. If we properly understand the meaning of this, the remedy is indicated at the same time. Then more or less as may be necessary, we should employ hygienic substitutes for the disappearing stimulation of the circulation; such as home-gymnastics*, massage, lukewarm baths with a good rubbing down after-

* In the ordinary manuals of home gymnastics there should be a series of exercises for increasing the circulation at the onset of the sexual period, and a series of very gentle ones for more advanced years.

wards, etc. Especially should we take walks in the fresh air, or, if the weather should be bad, in the corridor.

All great fatigue, and especially continuous mental-strain should be avoided. The best book for an old man is the history of his own life. CICERO says in "*De senectute*", that old people with their experience can be most useful to the younger generation. This is certainly very useful to the younger generation, although its results often turn out quite different from what grandpa thought when he was vaunting his own young days.

In this connection there is a special point to which far more attention must be paid than in earlier years. Because the circulation is no longer stimulated sexually, it is of the greatest importance not wilfully to hinder the circulation still more by neglect of the other two secretory functions which still remain active. There is always great danger, because the urge is not so distinctly felt, that old persons will neglect these functions; vice versa, if he is aware of this latter danger, that he will continually worry himself over a possible forgetfulness, and it becomes almost an obsession with him. And he will also underestimate his own capabilities in this respect through diminished sensibility*, and if his family is not aware of this, they will put it down to incipient idiocy, which often proves very trying to the doctor's patience.

As our readers may see, the curve of our story has taken a downward course again, because we must again refer to those material details that we started with. But life is like that. When the old man becomes so helpless, he needs sympathy and help, just like a child, and it is very comforting to him, if his relatives quite understand his condition, and assist him kindly in his needs. Old people are like little children, they like to be spoilt a little. Little tit-bits and sweet things are also very welcome; for they can no longer eat much at a time.

* When impotence is complained of, at the onset of old age, through the same lack of sensibility the erective capacity is frequently underestimated. There may also be an anatomical reason, in advanced age, why the amount of the excreted defecation may be underestimated, i. e. when there is a *prolapsus ani*. If the reverse is the case, and the voiding of urine is felt too greatly, it is often because the end of the prepuce is turned in, through the cold, for instance (see footnote p. 92).

And now we come to other typical troubles of old age; which in general originate from the internal decline, i. e. from the wearing out of the organs.

We referred in the last chapter to the lessened sensibility of the more delicate organs; finally however, the general sensibility of the skin, i. e. the sense of touch also becomes weaker and weaker. This may easily produce the impression on those around that the old man is indifferent, careless or dirty. But one should then remember how careful he was once!

And on that account he will no longer sufficiently notice harmful influences; or if he notices the danger himself, he will be all the more anxious. Fortunately the sensibility to pain, and the psychic sensitiveness to suffering also become gradually lessened; and if compared with the sensitiveness in childhood, the difference is most remarkable.

Secondly I must mention the diminished efficiency of the entire muscular system, especially diminished capacity for sustained effort. If young men overtire themselves, their muscles will be painful; but this occurs very rapidly in old people, even if the muscles only have to maintain a certain position for a short time. And for that reason everything must be shortened now; short walks, with short stops for rest, and short conversations. Even sleep of a night can only last a short while*, and thus a few little naps in the course of the day are found necessary to repair the loss of sleep; it makes them very happy when they can have "forty winks".

When they sleep in the day-time, they ought to lie down, instead of remaining seated, for they sit up too much as it is. If we take the trouble to consider all these things, we can reduce the troubles of old age to a minimum. At last there comes a time when all movements of the muscles are painful, slow and trembling, and all the joints then resume the flexed position they occupied when our lives began.

Thirdly the power of resistance to harmful influences is reduced to a minimum, which is sometimes erroneously or perhaps euphemistically called hyper-sensitiveness; and yet, as

* Hence the paradox, that they are always complaining of sleeplessness, and yet they sit all day long nodding in their chairs, ready to drop off to sleep at any time. Even at the prime of life we often find the days and nights of our solar system far too long (see page 205).

we have already seen, it is especially the sensibility which is diminished so terribly. While the strong man must brave a danger and learn to fight it, the aged man is obliged to avoid it like a little child. Happy is the man who glories in his strength, and especially his sexual strength, in the flower of his manhood, so that he can found a happy home and a family; for later on he can enjoy the rest and the attentions he needs in his old age. And then it will be seen who is the more fortunate, the young man, who is able to work, but obliged to work very hard and to earn his living by the sweat of his brow, and sometimes in care and trouble; or the old man who is in need of rest, who is able to enjoy his well-earned repose while he looks back happily on his former exploits.

But everything comes to an end, however faithful and loving the care may be. In this respect it is a great consolation that the end of our life generally comes more gently, the older we are. For the curve of life has fallen to zero so long ago, that the transition is not so hard at last; often it is only a falling asleep.

62. *The Graph of Life.*

We have studied the love-life at the different periods of our existence, and we have learnt that the sexual urge increases in strength and importance from year to year, until one reaches a certain maximum, after which it gradually diminishes, and our life-energy with it, as can be very clearly shown on a chart. This curve develops in a similar way to that which we called the massage-curve (see page 358); like the ebb and flow of a tide, with the summit in the middle.

In this connection we have observed certain lines of demarcation between the sexual periods, which, like every kind of classification, are more or less relative, but which give a thoroughly practical insight into the question. These various sexual-periods are so decidedly influential in the fashioning of our lives, that they characterise the most important of our life periods.

We shall briefly review this division of our life into different sexual periods. The first three periods we shall not deal with here, because they all belong to the intra-uterine life. They are firstly, the absolute sexlessness of the first few weeks of our embryonic life, secondly the development of the hermaphroditic or bisexual condition, and thirdly the foetal differentiation of the future male and female sexual organs. These comprise the first three stages of evolution in the great evolution of species, as we explained in Chap. 40.

The really decisive alternative in sexual classification indeed lies in the question whether we are able to afford each another the mutual help in sexual intercourse necessary to ensure sexual satisfaction (page 162). This is typical of the adult age. So long, however, as this is not yet the case, we speak of childhood, and if finally this has ceased to be the case, we call it senility. And we say there is a transition period between childhood and the adult age, and between that and senility.

Sexual abstinence is found to be most beneficial at these two transitory periods. We feel ourselves mentally and psychically stronger; we are proud of it. But if we have yielded in

spite of our best intentions, we feel enervated and annoyed; we are sorry that we were so weak, and are filled with remorse.

But on the other hand at the summit of our life, we feel a renewal of strength, and are soothed, when we have fulfilled our marital duty. And conversely we are sorry if we have failed in the least to reciprocate love. How greatly will many a man on his death-bed regret with tears in his eyes, that he has not been kinder to his wife! And how cold and empty is the life of him who has never loved!

These personal feelings arise from physiological necessities. It is the same thing here as with all effort and exercise. We may say that at the prime of life the more exertion one makes, the more strongly will any function develop. If however, too great efforts are made at a very early age, the function is weakened, and if we do this in old age, exhaustion results. These are the most essential points of the life-curve.

It should not be thought however, that these periods are limited to fixed years of one's life. On the contrary, the greatest extremes are met with, such as precocious or retarded puberty, premature old age or apparently eternal youth. Or the tracing of an apex in the curve may fail altogether; for it often happens that the youthful stage imperceptibly merges into old age. This frequently occurs in women. Still worse: it may also happen that the stage of childish asexuality may be imperceptibly transformed into the asexual senile stage.

The different periods can sometimes change unnoticed into neighbouring periods: young girls, still children, who become pregnant; withered old men who attack a woman or even a child quite unexpectedly. And even apart from these abnormalities, how sudden may be the transition from child to man. And how easily it may have happened in the transition period of youth, when there was no thought of sexual intercourse, and one felt so sure of oneself, so perfectly happy with the most harmless caresses, and unexpectedly the impulse rose to blind frenzy, even if it meant death on the spot.

To shape our lives aright, we should follow the normal curve, and never confuse the different life-periods with each other. For instance, a little ignorance, naiveté and timidity, is not out of place in a child, and on the contrary may lend it an added charm. At a later period of life however, this

uncertainty, this ignorance would be a fault, often dishonourable and almost criminal. And it disgusts us just as much, if an old man tries to deny his age, and to excite himself or his hearers sexually through vulgar "double entendres". He thinks that young people will find this funny, but it is only repulsive. And those young people especially, who are the freest in their behaviour when in each other's society only, now feel this behaviour of the old man to be a parody, and are thoroughly offended.

Circumspection is still more imperative when acts are concerned. It is certainly criminal to excite a child sexually; this is universally admitted. But it is equally wrong to preach to married couples that they should live together like brother and sister, if there is no serious reason. Thus in many cases this separation into life-periods may become normal for us.

The painter, the poet, the writer have all kept these different sexual life-periods quite distinct in their master-pieces; it is indeed this which is so charming, so delicate, so refined, in their compositions. But judges have often sinned against it, when they have pronounced too severe a verdict. And moralists have done violence to Nature far more often, have praised the morbid, and extinguished life-energy.

And we as doctors must always take these sexual life-periods into consideration, not only when prescribing a régime, but when judging of pathological and especially psycho-pathological cases. In children and young people we should always watch for signs of masturbation, in the married we should not neglect to enquire if they find complete sexual satisfaction in their conjugal relations, and in the aged if they feel depressed through impotence.

This trio: masturbation, coitus, and impotence, together form a typical whole. They even form a complete history of life, from childish naiveté to senile exhaustion. It is a search, a finding of oneself, and a final state of exhaustion. Indeed these are the three normal phases in normal sexual intercourse: one always begins by caresses that are not copulation, yet are exciting; then comes coitus as the climax, and one ends in impotence. It is always the same curve of Nature with the apex in the middle. And as the mighty waves of the ocean are formed from tiny ripples, so also is our life-curve formed from the many little sexual curves.

VI.

PATHOLOGICAL SECTION

63. Introduction.

Up to the present we have always shown the sexual life as the source of our life-energy, not merely showering life upon us in the future as the ultimate result of a rejuvenation, but a renewal of our life energy now, immediately. Just as with stocks and shares in the world of finance, the coupons are rows of little cheques that are only payable on certain dates at intervals of months, while the share itself, the original document, is the real property, of which we are proud. And this original share may be compared to the capital of love, which makes us richer and fills us with enthusiasm from the first.

Now comes the question: does the ideal which we have developed in this book really agree with our experience, as medical practitioners, of individual and social sexual life? Not in the least! This sexual life, which ought for almost everyone to be a source of the greatest joy and happiness, because it governs our feelings of happiness more intensely than anything else in the world, is really nowadays for the great majority of people a fruitful source of misery and even of despair.

But this state of things is the best proof of my thesis. In reality we see on every side only glimpses of love and happiness. How beneficial and indispensable the sexual life is in its own way, is best evidenced by the misery felt by man wherever this ideal life is misunderstood, perverted or misused.

For many centuries now a "higher" form of love has been preached to us, in which every human heart should be filled with love, and the elementary school of love, as mother Nature herself has shown us so clearly, has been systematically neglected, misunderstood and despised. So it is no wonder that this doctrine has met with so little success, because we have not yet been educated even in love's own preparatory school.

Let us however be quite fair in our judgment. Formerly, when man stood on a lower scale in his knowledge of the

laws of nature and of morality, the spiritual and material seemed to be divided by an unbridgable chasm, and our leaders in their dualistic perplexity looked upon the senses as the source of all evil, and considered the sexual life — the most prominent of the manifestations of the senses — as a lust of Satan. The abnegation of all things sexual thus became the highest of all virtues, and those who practised self-denial in this respect were classed as saints.

Especially in the East where unbridled sensuality appeared as a striking contrast, the oriental temperament only too readily ran to the other extreme in adopting this asceticism. I may mention *Buddha* as he is described to us, when he abandoned the voluptuous court life by which he had been surrounded; the first Christian martyrs in striking contrast to the depraved Roman society; St. Augustine, who became pious in his old age, and then deplored having spent his adolescence in immorality, and his manhood in sensuality.

The opinions and convictions of this last-named saint became the basis of Catholicism, especially as he represented the absolute supremacy of the church as the principle of all that was good, over the state as the principle of all that was evil. And to a still greater degree his doctrine became the foundation of Protestantism. And indeed LUTHER* was brought up as an Augustine monk, and CALVIN'S gloomy dogma did not originate in the gospel itself, but only dated back as far as the teachings of *Saint Augustine*, the father of the church, who had declared sensuality to be the worst of all sins. And because it is through this self-same sensuality that the human race is propagated, he fancied he saw original sin in it. And the whole of the doctrine of salvation has as its *raison d'être* the saving of our souls from this original sin that began with Adam and Eve in the Garden of Paradise.

Thus in our higher civilization, dominated by this austere dualism, the sexual life becomes continually more furtive, instead of flourishing in the light of day. As a matter of fact man is born sexual, theoretically however he is expected to have no sex; duplicity everywhere! A hypocritical morality is preached as the highest virtue; without it we cannot get on.

* Although LUTHER did not approve of celibacy for priests his attitude towards the female sex was not very edifying.

How many married people there are, who allow their sexual instincts to have their natural outlet in their conjugal relations and feel all the better for it, and who, like St. Augustine, and perhaps from their reminiscences of youthful days like his, yet cannot help thinking that really it must be something sinful, and who in consequence are tortured by this internal conflict.

And this uneasiness of mind is felt to a much greater degree when the sexual intercourse is extra-marital, even in those cases where this is not only permissible, but is actually indicated and ethically right. So it is the preachers of a false morality who poison our ultimate happiness.

And economic difficulties have also upset our sexual life. The struggle for existence has taken possession of the marriage market; and so many a wife who has been successful, has had too much sexual activity forced upon her, whilst many of her unmarried sisters pine away from loneliness. Both categories of women feel unhappy. And in the market-place of unchastity all that is holy is trodden under foot and smothered with filth.

We must therefore not be surprised that the sexual passion should be misunderstood and abused, and that up to the present it has never been sufficiently valued by Science. None of our functions has been so little elevated to consciousness, so that we might make it subservient to our higher aims. To have done everything in our power to contribute to this result is the endeavour of this whole book.

In order to help to remove the prevailing errors and evils, we must now, in this last part of the book, carefully review these morbid manifestations. But this can be done only in a very perfunctory manner; for in every field the normal can be briefly stated, while the deviations from the normal are innumerable.

We do not intend to speak of sexual diseases in the narrow meaning of these words, i. e. of venereal diseases. They are only so named after Venus, the goddess of sexual desire, because in our climate they are usually propagated through sexual contact. Among the Esquimaux and such races, who all, whether young or old, embrace each other as much as possible on account of the severity of the cold, these diseases

have absolutely no special connection with sexual intercourse. With the actual nature of the love-life itself, these diseases have no more to do than have theft and murder: which are not infrequent amongst unchaste individuals. We have already quoted the most important hygienic observations at the end of the first part of this work.

64. *Excess.*

Moralists are never tired of warning us against sexual excess, but I do not remember ever hearing one of them utter a warning against *too little* sexual intercourse. Even the Greek gods were always jealous of those mortals who enjoyed too much earthly happiness. I really believe, that if the act of procreation were something very terrible and disagreeable, these selfsame moralists would prevail upon us just as continually not to avoid it but to perform this duty frequently!

From every pulpit thundering denunciations are continually launched upon our heads against unbridled passion, against steeping oneself in sensuality and voluptuousness, as it is generally called, — and this, let it be remarked, in a world in which almost every person longs for a little more love, a little more affection, a little more joy in life! The stripling who has fallen into the bad habit of masturbation, — is that excess? That is sexual poverty!

To be engaged to some nice girl with the happy prospect of an early marriage would be his dearest wish, if that were possible; all those men who are obliged to live alone in furnished rooms and who sometimes from sheer loneliness and lack of affection around them give way to the temptations of drink and prostitution, is that excess? — It is the absolute absence of the happiness of love.

Alas, how many persons with beautiful bodies and amiable characters there are in our modern society, who will never have their share of earthly happiness. And all the married people, who perhaps practise marital intercourse, with the greatest regularity, frightful regularity to speak the truth about the matter, but who however are not at all suited to each other. They give each other no satisfaction, either psychically or physically. Their name is legion. They are hungry perhaps not on account of *too little* nourishment, but because the nourishment that is offered them is not suited to their digestion.

Of course there are persons who indulge their passions to excess, excess is harmful in this as in every other function, and for this reason it is advisable to speak of this

excess now. But we must not generalize! As a medical man I can remember several cases of sexual excess both in and out of wedlock, but in far the greater number of cases there was a lack, a terrible shortage, and only very rarely a great wealth of enjoyment of love and life. I often witnessed a squandering of strength; but that is no excess, only a misguided use of power.

We have so often referred to this in this book! Especially to precocious excitation of the senses at an early age, and to a wilful artificial creation of a sexual urge; so all this need not now be repeated. Fortunately nature is our best teacher in this matter. Lusty, cheerful, energetic persons do not so readily fall into lonely idle dreaming. And nature herself sets a limit to profligate waste of energy through fatigue and exhaustion, just as in every other function.*

If the moralists really want to do good work, they should help us to attain the optimum; they ought not, however, to be for ever preaching the minimum to us. Poor humanity, if we are all doomed to suffer from the minimum!

But for the time being there is not much to be hoped for from our official preachers of morality. They are still living in the dark ages when people were absolutely helpless against excessive fertility and venereal diseases, when the preaching of sexual abstinence as the loftiest ideal was indeed a duty. Nowadays, however, all that has changed. But in order to uphold their old-fashioned views, they maintain a desperate opposition to all hygienic measures and practical advice, which are capable of improving the state of things in this field. Human happiness and the future of the human race, must be relentlessly sacrificed to their out-of-date dogmas!

Not only, human happiness, but the whole future of the human race must be ruthlessly sacrificed to their antiquated dogma! So the most highly immoral is dubbed moral, so that even the term *moral* is now publicly discredited.

* Masturbation, in particular, cannot be indulged in to excess with impunity. It is true that the cell-production in the testicles is almost as unlimited as that of pus-cells in inflammation (see Chap. 5), and the production of mucus in the seminal vesicles still more so. The central nervous system however soon feels the strain and becomes debilitated.

Yet there really are cases in which, through an earnest mode of life and finer gifts of observation, married folks themselves learn that greater moderation and reserve have more beneficial results than too frequent indulgence. Especially is this true of that time of life to which we have already referred in Part V as the approach of old age. And there are also many people for whom, for special reasons, the motto "the less the better" is found the best to follow: For instance when fatigue and debility, or signs of a weak heart with fear of palpitation and giddiness are manifested. Life is then found to possess other charms, and only more moderate sexual excitement, which is still found very beneficial, will afford the fullest enjoyment in such cases. For as soon as excessive excitement is felt, and the stimulation too strong, especially at the approach of the orgasm, such persons feel too overwhelming an emotion, feel the sensation too much for their strength. They then always make up their minds, that they won't let it go so far next time. Such persons very often feel proud of their heroic resolution, and want to force their own continence on everyone who will listen to them. For them the most moderate indulgence then becomes an excess.

But the married life of fully developed, hale and hearty folk at the summit of their life-energy is quite different. They do not worry themselves or others, they go joyfully about their business or their household duties. Rest and recreation succeed work and activity without anxiety or nervousness. Now and again, when their age, their affectionate nature and sexual temperament require it, they consecrate the intimacy of their conjugal bliss. When they reach its highest enjoyment, Nature beckons kindly to them, and they obey the call when it appeals to them. Every one of these occasions is a renewal of the sacred bond; and their sexual intercourse becomes a fulfilment of their conjugal vows to render each other happy.

They are not at all ashamed, they feel proud of it. They would feel ashamed if they were obliged to stifle their passion in loneliness; that would seem quite wrong and unnatural to them. And how cold and heartless! I once heard a young married lady, after listening to a long sermon in which abstinence had been held up as the ideal state for married people,

proudly declare: "I think *that* is a dirty idea!" She felt deeply wounded in her purest feelings.

No indeed, these sincere people, who duly honour both their bodies and their souls, and live in accordance with the laws of Nature, have no reason for indulging in excess. For if we keep a physiological urge within proper bounds, it never over-excites us. Only morbid deviations lead to over-stimulation, and none so much as a too protracted compulsory abstinence. Only then will passionate indulgence be an inevitable consequence. For in such a case, if once one gives way, he is certainly no longer master of himself, and plunges into debauchery. That is the constant danger of excess, which the preachers of abstinence always hold before our eyes as a spectre; but it only exists in their own heated imagination, perverted by abstinence.

The sexual appetite, physiologically considered, is like all other periodic needs. One should learn to control one's reflexes, but when appropriate occasions arise, they should not be deliberately suppressed. Nature makes her laws known to us by her barometer of the blood-pressure and the pulse. On the wedding-night, a certain amount of moderation and discretion should be observed; with of course, a little more of giving way on both sides during the honeymoon, for the newly married couple must get used to each other gradually. As a regular habit for the married in the heyday of their lives indulgence every day of the week is certainly too often, every other day may be taken as a reasonable average; as time goes on they will gradually lengthen the rest periods of themselves, and LUTHER is *said* to have given the well-known rule: "twice a week". Later on in life, once a week will perhaps be found sufficient, and then, with the advancing years desire gradually dies down. If we live thus exactly according to natural rules, the foundation of married happiness is secure, and this is the best safeguard of harmonious spiritual love.

Once, when on a visit, I heard the mistress of the house exclaim: "every dinner is a banquet for me, when I sit down to table"; so the consummation of our marriage should never be a thoughtlessly accomplished routine, but a constantly renewed occasion of festivity and joy.

65. Miserable Makeshifts.

We are so far removed from sexual excess, that we are often tempted to go to the other extreme, and employ miserable makeshifts. These are the melancholy ailments from which our love life suffers, and which are so difficult to avoid because, like other sorts of ailments, they partly arise from individual and partly from social-economic causes. We have referred to them several times in former parts of this work, for just as we learn to appreciate light in contrast to darkness, so we can only truly realize the value of the good, when we see it contrasted with the evil. But in order to be able to attack the evil at its source, we must now consider it thoroughly as a subject of the greatest importance.

I will begin with masturbation (so-called *onanism*), which we have already thoroughly discussed on page 163. If we wish to form an opinion about a case of masturbation, or to attempt its cure, then we must consider first of all the age of the person addicted to it, for the diagnosis, and especially the prognosis of the case, varies considerably with the age.

There are many different sorts of masturbation.

In this connection I would first name the handling of the external genitals in quite young infants, which can scarcely be termed masturbation, because nothing really sexual can be said to exist in the child so far. As a general rule no more importance need be attached to this habit than to so many others more or less inherent to this age; such as continual playing with the fingers or toes, biting the fingernails, sucking the thumb or any foreign body given them for the purpose e. g. a sugar-bag or a "dummy". Indeed, at this age, not only are the genitals sensitive, but all other parts of the tender little body also (see Chap. 42). All these deep — rooted habits are dangerous only because they are deep — rooted, and are apt to take on the form of a mania.

Then there is, later on, the more systematic fingering of the genitals by little children, when they do not know what to do with themselves, and this may also become a blind passion with them, just as when they were babies it was

impossible to break them of sucking their thumbs or their dummies, even by force, because the local stimulation, like all other forms of massage, is accompanied by pleasurable sensations. (see page 128).

Even if we tie their hands, we may see them sometimes passionately rubbing themselves on the edge of a chair or sliding up and down on a stool; a striking proof that in such a case they cannot be cured by force. The climax of this excitement may in rare cases simulate an attack of convulsions, something like the culminating point of sexual intercourse. And yet at this age there is no real sexuality. It is really only a case of an artificially induced reflex consequent on the stimulation of the skin and mucous surfaces, which, increasing in intensity by the continued friction, finds at last its relief in the reaction of the nervous system, without any true sexual feeling being aroused. We have given many examples of this on page 130.

Even mutual masturbation in young children may be regarded as only a variation of the usual mutual teasing and tickling that they so readily practice on all parts of the body; preferably, of course, on the most sensitive parts.

As they grow older it becomes more serious at the approach of the age of puberty. Then there arrives the usual stage in which the school children use their hands under the desks, if the teacher does not take great care; the artful device of keeping the hands in the breeches pockets; and the bad habit of using the hands under the bed-clothes, if mothers do not watch their children when putting them to bed.

Then when the age of puberty has been reached, we have masturbation with actual emission; perhaps at first simply as an experiment, out of curiosity, so as to see what the sexual organs are really for. This is far more dangerous than infantile masturbation, because from this time onwards it becomes a need, unless we combat the habit strongly.

If at this age masturbation becomes a confirmed habit, it may endanger potency later on.

The nearer we are to the prime of life, the greater the danger of an uncontrollable and shameless manifestation of masturbation. In boarding schools where there is insufficient supervision, where the pupils are thought to be in perfect

safety because there is no co-education, mutual homosexual practices are not infrequent, and in big pensions and barracks there is often the most shameless collective self-masturbation. It must always be thought a lucky thing if young men do not learn to frequent houses of ill-fame: first in their youth, before they are even engaged, and again at the approach of old age, when marital intercourse is no longer possible. In the brothel there is not, as with masturbation, only the danger of harming oneself, but as a result of a single night's folly one may ruin not only one's own health and happiness, but that of the future wife and children as well.

Leaving all higher ethical considerations out of the question, compared with the question of prostitution, masturbation is the lesser evil.

When two young people are courting they keep at first within the bounds of modest caresses; but gradually getting bolder, easily get into the habit of mutual heterosexual masturbation as a foretaste of marital bliss.

In married life itself, masturbation often plays an important part. It is generally only an occasional makeshift, if one or other of the pair is away or ill, or if the wife is obliged to refuse her husband on account of advanced pregnancy, or for other reasons. Occasionally also, mutual masturbation is habitually practised between married people, if they do not know of better preventive measures, or have none at their disposal.

Unfortunately there is also melancholic masturbation, a cryptogamic blossom of the lonely soul, as the picture of the blighted dreams of a defective love-life.

Then finally we have senile masturbation, when impotence has supervened, as a barren reminiscence of the pleasures of youth. It is not uncommon to find its shameless practice in old age as a symptom of a second childhood.

If all life-histories could be truly and conscientiously written we should often find the real reason of the origin of the evil, for here we have not a normal picture before us, still less the manifestation of an ideal, but a phenomenon of domestication, an unsatisfactory adaptation to the conditions of modern social life, and to our distorted conventional morality. Just as the sunshine is always accompanied by shadow, so all our sexual

life-periods are accompanied by the shadows of masturbation; and the more brilliantly our sexual ideals are illuminated on the one side, the more frequently do we see this dark side.

This recognition of the truth is also of great scientific importance, if one can only judge it at its true value. This life-picture of a free adult human being, is the simple consequence of a biological process in its crudest form. We have already studied this in Chapter 42: the gradual dulling of the sensibility of our epidermis, which constantly leads us to seek more complicated forms of satisfaction.

It is only when we admit this biological law that it really becomes possible to stop the process of degeneration and to postpone the advent of old age. Self control is the magic remedy, the only infallible remedy, which enables us to preserve our finer sensibility in its purest form. Not that that need mean an absolute denial of all sexual life, but only an ethical and reasonable mode of life* as we have outlined in the whole of this work.

If we desire to wage effective warfare against this evil, we must judge each case upon its own merits, firstly, as we have already mentioned, according to the age of the subject, and then taking other details into consideration. If it is simply a case of yielding when the urge becomes too strong, it may be that when the person is drowsy and half asleep, the slightest movement of the warm bedclothes suffices to precipitate the climax, and the difference between a half-involuntary ejaculation and a nocturnal emission during sleep almost entirely disappears (see page 165). But the more it is a case of a voluntary and forcible induction of the symptoms of excitement, the greater both psychic and physical exhaustion become. In this connection the frequency of the act is of the greatest importance. For masturbation is far more liable to be practised to excess than is copulation, because for the latter two people are always required, whereas in masturbation the pleasure can be heightened at will, and herein lies the real danger of the habit.

* In regard to this contrast between savages and cultured people, I should like to refer you to my article: "The doctrine of Evolution and Views of Life" which appeared in vol. XI of "Geschlecht und Gesellschaft", published by R. Giesecke, Dresden 1922.

Of far greater actual significance is the question: whether there is a special external exciting cause? In the case of children, for instance, if we are fortunate enough to get on the track of some such cause, we may often succeed in devising a speedy cure.

I may mention for instance, as irritants of the skin: clothing that rubs or presses, woollen underclothes, feather-beds, badly fitting trusses, uncleanness, e. g. through dribbling urine, inflammation of the skin or prepuce, worms, or perhaps the irritation of a flea; also constipation, too rich and stimulating diet, and as a morbid phenomenon, diabetes mellitus. All this has been thoroughly treated in Part III, especially in Chap. 32. Among older children evil companions, bad books, cramming with too many home lessons, and above all idleness, are the most frequent exciting causes of masturbation.

Even after masturbation has become more or less a fixed habit, it is often possible to effect a satisfactory cure, if one is careful to adapt the treatment to the individual case.

As in so many other bad habits and morbid conditions, the essential point is to begin the treatment early, before the habit has become too firmly ingrained. It is advisable not to appear angry or upset when one learns of the habit, and to treat it as though it was simply something "not quite nice"; for if we make too much fuss about it and punish it too severely at first, we only drive the children to hide their evil propensity, and then it becomes finally incurable. The most important point of all is to direct the attention of the little sufferer to other things, and by means of constant occupation, and especially fatiguing muscular exercise, to leave neither time nor energy for day-dreaming. Then a careful supervision by the parents, if necessary a rational system of rewards and punishments, not as coercion, but only to maintain the child's interest in the fight against the habit.

If masturbation has already become habitual, we can adopt the same system as in weaning an *habitué* from morphia or alcohol, and choose either the direct or the gradual method.

° If the first is chosen, the patient should be given a change of scene, under careful supervision, avoiding all the exciting causes that have been observed in his case, and with the categorical injunction that he should give up the evil habit

once and for all. His good resolution should be helped and strengthened by associating with good playfellows, regular occupation of mind and body and good advice. So we seek to overcome evil with good, and to awaken higher ideals. When we are dealing with adults, we may hold out the prospect of a happy marriage, at least if the patient* is not already too far ruined physically and mentally, and if the evil can first be cured.

If we choose the second, or gradual method, which one is obliged to do in the great majority of cases, because the will-power has become too greatly weakened for such a vigorous mode of treatment as the first, and perhaps also because the bodily strength has already suffered too greatly for it to be able to support this sudden change of habit, then one must imitate the mothers who want to wean their babes, who space out the intervals of giving the breast in a systematic manner. For adults the plan regulating their conduct should be written out in detail, preferably by the doctor, tutor, or clergyman. If the patient has a relapse, it is not necessary to start again right at the beginning, but the treatment can be recommenced at the half-way stage, according to the severity of the relapse.

This second way is longer and more troublesome, and more uncertain of ultimate success; but it may prevent a complete failure which might otherwise so easily happen, if after the first effort relapses occur, although the patient was full of hope that he was already cured. And he might only too easily be tempted, simply from disappointment at his failure, to throw himself more unreservedly than ever into the evil habit, abandoning all hope of permanent cure.

The second is more of an educational method inasmuch as the task of improvement that is set the patient each time is always one possible of attainment, and its difficulty is increased proportionately with the patient's degree of training.

* This is meant generally speaking: it may be either a male or a female patient. Only in females masturbation is very difficult to observe. But even with young men it is not easy to distinguish between the stains on bed-linen etc. caused by masturbation and those arising from nocturnal emissions. Both dry hard, harder than milkpots and softer than the small stains produced by gonorrheal discharge.

Even if absolute success is never attainable with this gradual method, yet the ideal is worked for, and one comes a step nearer that ideal, which makes the patient feel each time that he has accomplished something after all, and he is cheered on his way. He is, on the whole, at last on the high road to recovery.

And then, later on, perhaps comes marriage, or he moves away to another locality, or he gains wisdom with maturer years. Like the physician who does not merely regard his work as an effort to save his patient's life, (for he often fails in this) but rather as an effort to help the patient to improve all his physical and mental energies, to help him in the fight against his troubles both bodily and mental, which almost always meets with success. And therefore this second method is usually crowned with relative success at last.

To remain constantly in sympathetic touch with those who have contributed to his cure, just as a total abstainer does with the Order of Good Templars; and here and there with some moral society that preaches against masturbation, is also very important as an aid to keeping the good resolution. The best advisers are generally the parents, or elder brothers or sisters, or some intimate friend.

The greatest danger lies, I repeat, in loneliness and boredom. Bad companions bring other dangers with them, such as aggravation of the evil through dirty talk and false theories; or they incite to mutual masturbation, which can easily lead to shameless vice and prostitution.

If however the evil habit finally cannot be overcome*, then at least no effort should be spared to reduce the ill effects to a minimum. Great care should be taken that the patient does not become shy of company or feel desperate, he should not be subjected to excessive mental strain which would exhaust his nervous system, and his bodily health and strength should be carefully attended to so that he may not suffer in this respect either. Thus a period of equilibrium may be reached,

* In any case the evil habit must be kept within certain limits, even in the most severe cases. The extreme limits of the permissible frequency must be judged by the details given at the end of the foregoing chapter, for no matter how moderately masturbation may perhaps be practised, it is far from exerting the soothing and beneficial effect of normal copulation.

in which although his condition is not altogether satisfactory, it is at any rate quite endurable. In very serious cases, in which there are symptoms of profound moral disturbance or mental derangement, it will usually be found that it is not masturbation that is at the root of the mental disorder, but that mental deficiency is the primary lesion, and that the excessive masturbation is only an accessory symptom, consequent upon it. Sometimes an alternation of the two conditions occurs.

One should be most careful not to frighten the patient by mendacious accounts of the terrible dangers and hopeless sinfulness of masturbation, as this would only make matters needlessly worse. It is serious enough as it is.

It is an easier matter to frighten people and to drive them to desperation, than it is to cure them of their evil habits. Simply because it is so much less trouble to frighten the young folks than it is to exercise watchful care and control over them, many parents and guardians hold the danger of hell-fire before their eyes as a punishment for the masturbation-habit.

The unfortunate subjects, who are already in a somewhat nervous condition incident to puberty (see end of Chap. 55), or suffering tortures from enforced celibacy, are in especial need of careful supervision, and at the same time of loving care and sympathy, and if they do not get it, being of weakened character, they give up and consider themselves for ever lost.

Many unbalanced ascetics have really believed that the sin of masturbation is the "sin against the Holy Ghost — the unpardonable sin". And there have been masturbators so impressed with this belief, that they have put an end to their unhappy lives with the most dreadful tortures, perhaps in the hope of escaping thus from Hell-fire.

Perhaps indeed, the superstitious idea of the Witches' Sabbath or of the Walpurgis Night* belongs also to this category.

* Just as we may often recognize in a devil, a fallen god who once was held in high honour, but who has been discredited through the scorn of the ruling class, or the envy of the priesthood, so also we may recognize in the ecclesiastical caricature of the witch, the woman who once was so greatly honoured as priestess, prophetess and sooth-sayer (see page 287). Once upon a time she wielded her broom like a sceptre in her humble cottage, while around her were her natural attributes: her open hearth and saucepan, her cat and dog. A representation of a

This superstition brought many an honest woman in the Middle Ages to hopeless despair, and when she was not denounced by a neighbour or a relative as a witch or as being in communion with evil spirits she often accused herself, and went a willing victim to the stake, in the hope of escaping, in the temporary fire, the eternal one of hell.

And so it unfortunately happens, if the spiritual leaders and moral guides of the people are themselves blinded by ignorance, and dualistically wander far from the truth, even neglecting to acquaint themselves with the real facts, as far as they are known to every medical man.

The simplest things in hygiene are treated from the ideological point of view, and thus in regard to marriage, a certain form of idealism is created, which always leads to disappointment, while in the case of masturbation the victims are driven to despair — for worse than the vice itself.

If however, we devote attention to the facts, which are surely serious enough to warn us of the evil, then we can, by comparing cause and effect, save many useful human lives from destruction by means of our timely advice and mutual help.

Some people think, when speaking of unsatisfactory substitutes for natural intercourse, that the use of contraceptive appliances by married people is one of the worst of them all. This opinion, however, does not agree with the facts.

It is true that certain preventive methods are very harmful; but there are some appliances that give absolutely no trouble and in fact cannot be noticed by the wearer during the night. It is however, not within the province of this work to go into this subject in detail; for the whole subject I beg to refer my readers to Mr. Coudray's English translation of my book

witches' Sabbath or of the Walpurgis Night reminds us of the ancient promiscuous erotic celebrations, (see Page 278), which were partly canonized by the church and partly stigmatized as an invention of the devil.

The delusion of sexual intercourse with the devil (incubus) may arise from nymphomania, from a pathological hyperaesthesia of the external female genitals, or from an uncontrollable impulse to masturbate. It may also have its origin in spontaneously occurring voluptuous sensations, or from morbid hallucinations. (See page 115). The chain of thought should not surprise us in the least, for it is a fact that in the highest forms of mystical piety, the ecstasy often manifests itself in feelings of sexual pleasure.

"Rassenverbesserung" (Eugenics and Birth Control), pub:
Richard A. Giesecke, Dresden-A. 24, 1923.

Many persons are hungering and thirsting for love, but owing to unpropitious circumstances are prevented from marrying. It often happens that they find a substitute in the intimate companionship of another person of the same sex, and live together. Not that there is anything of a homosexual preference, such as we dealt with in Chap. 59; but because in their inner consciousness they feel that friendship, after all, is the greatest thing in the world, and because it reconciles them to their fate.

Such an intimate friendship may be as faithful and inseparable a union as the most beautiful of heterosexual marriages, and very often is quite as happy, because the identity of the sex so frequently includes an identity or great similarity in tastes and wishes.

We often meet with (or suspect) such very intimate friendships especially among the most intellectual of women; and that for two reasons: firstly because whether she marries or not, a woman is always more dependent on her own cleverness than a man, and secondly, because as a general rule, men have a far wider circle of friends and acquaintances to choose from for friendship and when they want to satisfy their sexual desires, only too often stray from the straight path.

One might even go a step farther and declare that the institution of marriage itself as we know it to-day, is a very poor substitute for that ideal state of bliss of which lovers so fondly dream.

Of course the objections that may be raised against our modern marriage system as it is at present organized, are numerous and serious. In many respects it is a worn out and defective institution, originating in abduction of the desired woman, and based on the crudest form of private property-owning, as though both wife and children were mere goods and chattels of the husband.

Milder manners and the idealism of a higher degree of civilization have of recent centuries somewhat ameliorated the unhappy state of affairs, but it is still far from satisfactory. Wherever in this work I have spoken of marriage, I have not

meant the legal institution of marriage such as we are all acquainted with, but rather ideal marriage as it should be, and as fortunately it often is, in spite of all the enormities of the law.

Once upon a time, when all races and peoples were simpler in their institutions and customs, the kidnapping of the bride was hardly worse than the present day sacrament of marriage, as it has been codified by man, and according to which all, no matter how widely different their circumstances, must be forced to fit in with one single rule; that is to say, that married couples must either behave entirely according to the regulations laid down in the code of common law, or not live together at all!

These are the sour fruits of a too absolute morality, as it is preached by the church; and by these fruits we see how little the state has freed itself from the influence of the church. Even the most zealous of modern churchmen willingly admit that there is glaring injustice in this legalized state marriage founded on the rules of the church, but as yet no far-reaching or satisfactory improvement has been effected.

Why should not the special conditions of each individual marriage contract be left to the parties themselves, at least if they demand it? The State should then simply ascertain and certify whether such a private contract may not possibly contain something that might prove prejudicial to a third party, and in particular, whether the interests of potential children are sufficiently guaranteed.

The revolt against this unsatisfactory state of things grows in strength every day, and many a conscientious man hesitates to exact a consent from his fiancée, which does as much violence to her rights — as a human being — as if it were her death sentence! In all progressive countries to-day, societies and committees may be found that wage battle against these conditions. Thus in Germany, Dr. Helene Stöcker of the Mothers' Protection Society (Bund für Mutterschutz), has taken up the cudgels with her periodical "Die neue Generation". And a favorite Sexual Reform magazine published in Germany is the illustrated monthly: "Geschlecht und Gesellschaft" (Sex and Society), edited by Baron von Reitzenstein and published by Richard A. Giesecke, Dresden, (publisher of this volume).

Baron von Reitzenstein is well known all over the world for his studies in ethnography and is a prolific writer on the subject of reform in all sexual questions.

It has been demanded in many quarters for a long time now, that if a State grants marriage licences, it should also require medical certificates from the contracting parties, guaranteeing them to be free from any such ailments or hereditary tendencies as may prejudice the health of possible children of the marriage. The legislator can however never find time for such "unimportant things"! And yet this is no party question, but touches on the highest and most important interests of all individuals*.

Ages ago there were many people of a low standard of morality who neglected legal marriage, from carelessness; in our modern times, on the other hand, there are many more people of a high morality, who offer themselves as martyrs for an ideal, and refuse on principle to enter the official bond of matrimony, preferring to contract a "marriage of conscience" or a "free love association", quite openly, and as a protest against compulsory and indissoluble unions.

Others drag out their engagements as long as possible, regarding this period as the happiest time of their lives, until better laws make their appearance on the statute books.

Yet we must admit that these substitutes for regular marriage are but poor expedients, because they lead to difficult situations for the descendants, which can only be overcome with a great deal of trouble, or sometimes not at all. And then in such cases, the condemnation of public opinion is always much harder and more cruel than the law itself.

In very many cases, the environment and accompanying circumstances do not allow a man to openly declare the situation, and the secrecy that must be maintained inevitably leads to endless hypocrisy. How far this is from the ideal!

* This may refer to Holland, this book being originally in Dutch, the author's mother-tongue, but for years now the German authorities have required such certificates, and have prescribed severe penalties for any breach of faith or false declarations in this respect. In Norway recently this also became law, and no marriage may be celebrated between two parties of any age or nationality in Norway without a "eugenic" certificate being produced by both.

Yes, it may still happen that as a compensation one must be satisfied with a purely ideal worship of the beloved ideal, a love that does not demand any love in return, and that never betrays its own existence. Clergymen and physicians are often the ideals of these dream pictures: or the hero of a novel, or a historical figure, or an ideal from the Scriptures may fill a yearning heart with its luminous halo. Unfortunately however, that is no reality. The small amount of religious freedom that we ourselves enjoy was wrested from the powers that be by the blood and tears of our forefathers; but how many more tears must flow in silence and solitude before even the most reasonable of our desires for sexual freedom will be recognized as the indisputable right of man!

Even in the most ideal organization of the sexual life, there will certainly always be difficulties enough, there will be every day tiny differences between the two parties in domestic life, and not always perfect harmony between the two characters. These little differences will always be just enough to make us feel the charm of love anew through the effect of contrast. For we must not forget that we are dealing with two persons: and how often it really happens, when one must decide for oneself alone, that one cannot be at harmony even with oneself.

And then it is a lucky thing that monogamy is the rule with us. Bigamy would however be a better term for our marriage, because there are always two persons in every marriage. Here again we have a stupid state of things, that this rule is made and fixed by the law and any deviation from it is punishable we are not very idealistic after all, if we believe in the boundless character of our sympathy, if three persons may not be allowed to conclude a marriage bond together, when all three earnestly desire it. One would think that should not matter to the legislator.

But of course, even without any such stringent regulations, in normal cases monogamy will always continue to be the ruling form of marriage; for even in countries where polygamy is permitted, it is only a few of the richer families that can afford such a luxury as a plural marriage. There are many reasons in favour of monogamy, both of a higher and lower order.

The jurist should, however, not lose sight of the fact that there are always exceptional cases which must not be overlooked.

And then again, if only this official monogamy were really a true monogamy! Very frequently it exists however, only in name, for sometimes the only difference lies in the fact that where polygamy exists, the husband is obliged to execute his duties towards the wives with whom he has his relations; whereas with us legal monogamy is often only a screen for the husband, behind which he amuses himself with all his other affairs.

And with us the actual institution of marriage has become such a miserable travesty of an ideal union, because the bond of matrimony, even if it unexpectedly becomes insupportable, can scarcely ever be dissolved*. One then finds oneself as it were, caught in the net of one's own fond illusions! In the first transports of love, one desires nothing so much as an indissoluble union; but in the course of the conjugal life, a thousand little influences, a thousand trifling divergences of opinion, may work together until the characters of the two partners develop in diametrically opposite directions, and the mutual situation thus become quite a false one. The feeling that one is bound fast for life to one's partner is alone often sufficient to spoil the whole situation. Just as the period when the lover swore only an engaged couple and both perfectly free, was full of poetry, so is the situation once they are married, a most painful one, because each feels that he or she is chained to the other, and cannot get away, no matter what the circumstances.

As long as the couple love each other, the official indissolubility of the marriage bond is superfluous; but as soon as it happens that the continuation of the union is costing one of the partners all his life's happiness, then it is an immoral bond, that should most certainly not be upheld by any power or third party. And it is a very doubtful kind of happiness for the children, if there are any, if the parents are forced to live together against their will.

The yoke falls most heavily on those people who, when they were engaged (see end of Chap. 57), had only one common ideal or one common interest, no matter how enthusiastic they may have been, limited to one sphere: art, or science, or music,

* Russia is an exception, as there (see page 286) the marriage ceremony is no longer obligatory.

for instance, or perhaps sensual pleasure, or bodily comforts alone; and this would be all the more likely to happen, the more the one object of mutual admiration threw everything else into the background. Future marital happiness is far better assured if there is a moderate liking for things of wider scope, and a mutual sympathy for the past in each others' lives is expressed by the two lovers.

The more their love before marriage was a blind passion, a passion with exaggeratedly high ideals set before it, the greater and more painful will the disappointment prove later on. Furthermore, if blind passion makes us strong in love, it is liable to make us very weak in legal matters, for love gives itself freely and gladly without reserve. And thus it is that, as a general rule we see engaged couples, especially those that are fearfully in love with each other, not only cast away the few precautions that are allowed, not only do they neglect to avail themselves of them, but prefer to sacrifice them entirely, as though these were a treason against love.

And if we have been very happy in our married life, and have shared our joys and our sorrows with each other for many years; as soon as one of us is taken away by death, the other feels desperate grief. Engaged couples too often forget when marrying, that some day one of them must go first, although they have the indissolubility of marriage impressed upon them. For the faithful wife, who has devoted herself all her life with body and soul to the "indissoluble bond", instead of standing alone and living as an individual for herself; the loss of her husband and life's companion is a catastrophe hardly to be borne. In many cases, when the wife has nursed her husband through a long and lingering illness, a severe nervous depression sets in, which undermines her health and threatens her life. And the loneliness at night is not without its deleterious influence, just as with children (see page 317), and in the case of elderly persons, grave feelings of anxiety may occur.

The tragic sufferings of widowed persons are greatly misunderstood, little appreciated, and often ridiculed by the majority of people. The gentlest coercive measure applied to the widow in olden times, was that she should be confined in a "philanthropic" institution. If however, the widow is left to her own resources, her fate may be quite different, according

as she is in pecuniary want, or has been left only without her usual occupations. In the first case it often happens that she makes an unwise second marriage, so that she may have a comfortable life once again, or in the hope of finding another husband, she takes in lodgers, which is sometimes a sort of "widow-prostitution", particularly at the "dangerous" age (see footnote to page 357). To the second category however, belong the more frequent cases of "widow's melancholy", often accompanied by a tendency to suicide, in order to follow the loved husband into the grave. We can thus the better understand the Hindoos, with their exalted oriental temperament, allowing their widows to immolate themselves on the "suttee". This is the most terrible example of the upholding of marriage, as the downfall of woman and of womanly individuality.

We now come to the subject of prostitution, the antithesis of marriage.

In order to be able to appreciate the various forms of sexual intercourse at their true value, we should never do as many thoughtless folks do: i. e. confine ourselves to only one alternative, that is: if it is not marriage, it must be prostitution*.

No, we must not be so old-fashioned, we must admit the fact that marriage and prostitution are the extreme ends, the terminal links in a long chain of gradations, endless in their variety. We must not judge from one criterion alone, but from different viewpoints: for instance, the length of time certain relations have continued, the degree of affection displayed between the partners, and how far private motives rule.

According to this principle, one may say that marriage has as its object a complete loving surrender for life, and is practically always bound up with a community of property; while prostitution on the other hand is a passing event, an act of the moment, without affection as its *raison d'être*, and always for money or other reward.

* Especially in clerical circles it is the custom, perhaps from ignorance, perhaps from a simple desire to calumniate, to brand every form of connection outside of regular matrimony with the vulgar word: "prostitution". In ancient Rome, on the contrary, all possible varieties of marriage and of sexual intercourse between the unmarried were countenanced and legally recognised.

When we go into the historic and prehistoric evolution and development of these two ancient institutions of prostitution and marriage, the categorical contradistinction between them becomes much more clearly apparent*.

Almost all existing forms of private marriage are, as we have shown in Chap. 46, vestiges of the stealing of the bride**, and these forms have gradually, in the course of hundreds of years, adapted themselves to gentler manners and to the ideal of a higher form of love. It is to be hoped that the curve of our evolution in this direction may go higher yet.

As a contrast to this, prostitution is far older in its origin, but in the course of time has fallen into more and more disrepute. Its analogy may be found by referring to the period we have mentioned in Chap. 45, when a community of ownership of all things existed in groups of individuals in various tribes, and the visit to, or entry into, another group must be accompanied by gifts. This then insensibly gave way to the custom of a man lending his own wife to the stranger who came as a guest to the tribe, if he was willing to pay for the privilege. Similar primitive customs still rule today amongst the members of many savage tribes and are highly honoured, because the natives see nothing but a traditional right of their guests in this concession of the wife. In many Indian and savage temples the priests celebrated prostitution in special feasts and ceremonies.

Even in the Middle Ages in Europe, the Church tolerated prostitution as a necessary evil, and it was publicly organised and regulated by the civil officials, principally because at that time there was no other way known of avoiding undesired children either in or out of wedlock, and because they also saw in prostitution an effective way of preventing rape of maidens.

* As WESTERMARCK justly remarks in his "*Geschichte der menschlichen Ehe*" (History of Human marriage) in the animal world the counterpart of our human marriage is to be found only among the higher orders of the mammalia, some of these only remaining together in pairs after the procreative act has been accomplished. Amongst the lower orders of animals, reptiles etc., the partners quit each other immediately after the act is over.

** Here and there, there are also traces of matriarchy (see Chap. 46).

On this principle we may say that the purpose of marriage is a complete affective surrender for life, and is almost always bound up with a community of property; while prostitution on the other hand is a momentary act without any background of affection, and is only practised for pecuniary reward.

The categorical contrast between these two immemorial institutions strikes us still more, when we begin to examine their historical and pre-historic evolution*.

Almost all modern forms of marriage are, as we have already seen in Chapter 46, a reminiscence of marriage by capture**, which in the course of the centuries, has been gradually modified in agreement with higher ideals of love and gentler manners.

It is to be hoped that future evolution along these lines will always continue to elevate us.

Prostitution, however, is of far more ancient origin, and unlike marriage, has, in the course of time, always tended to be held in less esteem. A certain analogy to it may be found in the period when men lived in groups where everything was held in common, but the entry into another group always has to be paid for with gifts of value — see Chapter 45 —, which unconsciously led to the custom of lending one's wife to the stranger, if he would give something in return. Such primitive customs are still held in high honor by many savage peoples, because they regard it as traditional hospitality. In many temples prostitution is celebrated with ritual by the priestesses.

Even in the Middle Ages prostitution was tolerated as a necessary evil by the church, and officially organized by the civil authorities, because neither in nor out of wedlock could they find a better means of restricting unwanted pregnancies, or of protecting females from violence. It was considered that it was far less evil for a few girls of the poorer class to fall victims to prostitution, as long as they could herd

* In his "Geschichte der menschlichen Ehe" — History of Marriage — Westermarck compares the married life of human beings with the cohabitation of animals, amongst which only members of the warm-blooded and higher species remain together in pairs after the rutting period, whilst in the lower species they only unite for the procreative act.

** We see occasional traces of the matriarchate. — See Chapter 46 —.

them together in an out-of-the-way part of the town, and that this had the advantage of allowing their respectable virgins and matrons to remain free from danger. As though it were not prostitution which, more than anything else, poisons the family life of the married and seriously undermines the institution of marriage itself!

Sterility and celibacy were the concomitants of prostitution. Even before the last war, nearly one half of the marriageable women in western Europe were unmarried; and as to the sanitary benefits of prostitution, all the strictness of state-control has never been able to exclude the danger of infection.

Whether the controlled prostitute is found to be suffering from disease or not is of no importance to her visitor. Be she never so healthy, perhaps only because she is an immunity to venereal diseases, she may nevertheless act as carrier of the infection from one man to another. And even if one were to attempt to subject every one of her clients to medical inspection, unfortunately diagnosis of these diseases is not simple, and a superficial examination is worse than useless. It is a fixed law that the danger of infection increases in ratio to the concentration of sexual intercourse, and so every brothel and every prostitute must therefore be looked upon as hot bed of infection, and every frequenter as a suspect.

The halo that once glowed around prostitution has faded for other reasons also. Times are changed. After the era of crude desire for orgasm we now have the era of a desire for contrectation and of mutual affection. (See pp. 254 and 323.) One is no longer satisfied with a mere pouring out of the reproductive secretion in return for payment in money. The new generation wants the pleasures of love, and prefers any other kind of relations, if they only depend on a certain amount of affection, and feels a decided disgust for the mercenary practice of prostitution.

Prostitution is not only the most dangerous, but also the most miserable of makeshifts.

Because it has already been amply proven by an unspeakable amount of suffering: that the two extremes (marriage with the tyranny of the husband on the one hand, and prostitution on the other) are both contemptible, it is evident that although the legislator obstinately continues to refuse a proper evolution

to the institution of marriage, better standards must be developed, more in accordance with our higher ideals and with the practical necessities of our modern life. It is of greater value for our spiritual evolution to seek and strive after this "Excelsior" than to remain for ever steeped in a traditional dogmatism. We begin already to meet with unsanctified unions that are as honestly intentioned as official marriage and often felt to be far more ideal.

66. *Abstinence.*

Although sexual abstinence in the child seems angelically pure, and in the young man so honourable, we are much to be pitied if we have reached the summit of our lives without having found what we sought, or if we have found it and lost it again, or if for any other reason the greatest happiness of life is withheld from us.

A certain amount of restraint in the fulfilment of our marital duties is always necessary; this only increases our sexual potency, our will-power is thereby strengthened and our love sanctified. By an adequate control of our sexual life — see Chapter 44 — we ceased to be animals and became men; and our finer ethical virtues have only been developed through the manifestation of due chastity and reserve — see Chapter 30. But in married life, absolute abstinence is always dangerous if too long protracted, and may end by completely undermining the happiness of our lives.

Of course the degree of abstinence varies with individual temperament and circumstances; abstinence that is only a necessary rest for one may prove a terrible privation to another; but absolute abstinence as a permanent state, especially where there is great mutual love, must always be felt as a great source of misery. Only in exceptional cases, in which there is some special and weighty reason for it, do we admire and honour it; otherwise we can only sympathize with the sufferers, because with abstinence disappears all the beauty which, as we have seen in this work, is so closely associated with the realization of love's ideals. Voluntary abstinence in married life may even ruin our character and lead us to imagine we are better and nobler than everyone else.

Some people used to think that abstinence was a physiological economy of our strength. But for healthy, vigorous men and women at the summit of their lives energy, the biological principle is just as true in this case as in that of any other function, that normal exercise stimulates growth and strength. It is that normal exercise which we term life.

Whatever the disastrous consequences of a permanent absence of sexual satisfaction, they cannot be properly studied in the married, as here no control is possible. For an elucidation of this problem we must turn to the unmarried; not to lead them into stupid ways, or to confuse their minds by empty sophistry, as has so often been done, but to call upon them to take up the fight in an energetic manner, so that they too in their turn, may learn what marital happiness is. The dangers of excessive intercourse are greater, certainly, than those of abstinence; but that is no reason for denying the misery and dangers that are attendant on the latter. On the contrary these should be duly brought to our notice, so that not only the sufferers themselves, but also all right-thinking people shall join in the effort to ensure such an improvement of our social organization as shall guarantee to every adult man and woman, if they so desire, their reasonable share of sexual happiness.

There are indeed still doctors and professors who stoutly maintain that sexual abstinence is *never* injurious, but such a generalisation cannot be scientifically supported, because in order to make this statement a law, one must first be acquainted with *all* cases and *all* their consequences.

Others make the rather more careful statement that they personally have never seen any harm accrue from it; but the reason for this may be that they are specialists or have never practised outside a hospital, or again have not been careful observers. One witness who has really seen something, is worth more than a hundred who have seen nothing. It is however the height of presumption to say that no medical practitioner, or none of any importance, has ever observed ill effects from sexual abstinence. Such a statement is either due to excessive naivety or is a direct falsehood. If we can refer for instance, to the work of a well-known Stockholm practitioner, Dr. A. Nyström: "Sexualleben und Gesundheit" pub: Oesterheld, Berlin W 15, we see many striking cases quoted, and a very complete bibliography of the subject.

The question of abstinence resembles that of poverty, and indeed these two problems are nearly related.

In the "good old days" some wealthy people were always to be found who professed a great affection for poverty, as

a protest against the profligacy and luxury of their times; poverty was then looked upon as a necessary social evil, or even as a decree of God; but at the present day one cannot find a single sociologist who does not see in poverty both an evil and a danger, and yet, in regard to sexual abstinence there are still people who preach it, as though it were something sublime and pleasing to the Almighty.

This disregard of the physiological optimum is excused on physiological grounds: namely, that neglect of the other physiological needs of the human body are punished by death while, they say, this is not the case with the sexual life. That statement however, by no means proves that a limitation of the sexual life does not lead to danger and suffering. These latter however, are liable to be overlooked, because unlike privation in other functions such as breathing and eating, the initial evil effects of a too protracted sexual abstinence are purely psychic, and with a little dogmatism the subsequent material untoward results may be readily attributed to other causes than abstinence itself. Poverty has been regarded as a necessary social evil, or even as an ordinance of God himself; now however one cannot find a single sociologist who does not look upon poverty as an evil and a danger. And yet in regard to sexual abstinence there are still people who profess to admire it, as though it were something sublime and pleasing to God. Physiologically they excuse this false conception of the physiological optimum by saying: other physiological functions must be performed as a matter of life or death, but such is not the case with the sexual life. But although one does not die of it, that does not mean that repression in the sexual life does not entail suffering and is not fraught with danger. It is easy then to say that the morbid symptoms proceed from the fact and that the patient has worried too much about the matter and has not tried hard enough to conquer. Those who interpret symptoms in this "a priori" manner, must take the responsibility themselves, of course.

If nowever, one wishes to establish the real facts of the case, it is certainly preferable to judge from one's own observations as a medical practitioner, and so I shall now mention my own experience in the course of some 25 years

of practice as a general practitioner in Rotterdam. Only in such a family practice is it possible to become sufficiently acquainted with the life history and environment of ones patients.

It is particularly difficult to form an opinion in cases of illness due to sexual abstinence, and no one is qualified to judge of them, excepting the family doctor who has closely followed them up. So now I will speak from my own experience, in order that the task of other observers shall be rendered the lighter.

First of all we must enquire whether it is really a case of sexual abstinence. We can only find this out, when we have won the confidence of our patient; the majority of cases occur in females, because on account of the external position of the male organs, men diagnose the trouble for themselves, and indeed usually find a way out on their own initiative their remedy often proving worse than the disease (see p. 143) Especially if the doctor himself is a man, it is the more easily possible, with care and delicacy, to test how the patient reacts, which helps to ensure a correct diagnosis.

The most difficult of all cases to decide, are those in which we are in the presence of only a relative degree of abstinence, cases in which during certain periods extra-marital intercourse or a liaison has been temporarily interrupted: as a consequence of which later on (see p. 161) the abstinence is doubly felt, something like the suffering endured in widowhood (see p. 393).

In the early days of my medical practice I used to think that cases of illness leading to the diagnosis of sexual abstinence as an aetiological factor, were rather rare, and this led me to pay more attention to them than I should otherwise have done. But the more such cases one has already seen, the more one learns properly to appreciate the value of studying all the trifling symptoms as a symptom-complex, and then one finally observes that there is scarcely a case of genuine life-long abstinence to be found that does not show the characteristic symptoms. Very often, it is true, the symptoms may be only slight, but still they *are* symptoms, and are quite sufficient to shroud the patients' lives in sadness.

It is very depressing, when we are granted a glimpse into

the lives of the many adult virgins who are compelled to remain unmarried, and who one is quite certain are not in the habit of having any sexual gratification whatever. In former days, when most young ladies of the upper classes lived more secluded lives and did not go in for any kind of sport or exercise, all these nervous symptoms were attributed simply to physical weakness.

Nowadays, however, most of them go in for some useful occupation and yet we find, that no matter how zealously they may throw themselves into this work they still suffer from their sexual abstinence.

At first their ailment only manifests itself in a certain amount of psychic depression; the patient feels herself out of sorts, weary, listless, takes no interest in her work and loses all her energy. There is no organic lesion to be found; the functional disorders are all little complaints that are not ordinarily so severely felt. When one gradually wins her confidence, one learns that life is cold and devoid of charm. They take no interest in anything. Poor souls: They often betray their longing for a little affection by petting an animal, or raising plants and flowers* or they develop a tremendous liking for a clergyman or a doctor; for the richer their spiritual life, the more do they feel the need of affection. No medicines, no pleasure trips, no holidays at the sea-side or in the mountains can help in this condition.

In more advanced cases one finds the patient nervous, excitable, emaciated, always unsatisfied, though she herself cannot tell why. She feels terribly lonely and passes restless, sleepless nights, always tormented by her unhappy lot. It is noteworthy that the more she suffers from sleeplessness, the less appetite she has**.

Then she begins to get weak, pale, and thin.

She tries every means of escaping from her uncomfortable

* The patient herself often says that she feels the whole trouble to be due to the fact that she ought to be a mother. Really, it is a crying injustice of public opinion to deny her the right which the legislator has not denied her; but whether motherhood would cure her of her unhappy condition is doubtful, just as it is uncertain that her child would find much joy in life.

** An association of symptoms that is constantly found in other cases

situation. She endeavours to give up her time and strength for laudable objects, she would like to perform impossible deeds, but accomplishes nothing, because her mental and physical energy is already too far broken down. In everything she finds only disappointment.

I could quote a large number of such cases from my practice, severe cases of complete loss of energy. The patient's parents and friends lose patience at last. If the spinster is no longer quite young, then behind her back they say harshly and cynically: "What she wants is a husband". In such cases the medical adviser of course can do nothing.

So slowly but inevitably a condition of anaemia, chlorosis and debility develops, with all their concomitant psychical and physical troubles — that vague but familiar picture which one so often sees in the unmarried, and which only too easily pave the way for other, more definite diseases. Of course, it is a matter of general knowledge how greatly all conditions of exhaustion predispose to pulmonary tuberculosis and many other constitutional diseases*. Then later it happens that one is hardly able to distinguish in the individual case which was the cause and which the effect.

When we gain time, we gain a great deal. If these patients did not so often meet with an early death through this class of bodily ailments, there would remain the possibility that, when in the course of time their sexual activity ceases their psychic life also reaches a period of repose, and thus at last a day of general mental and bodily peace and relative health and comfort may dawn for them.

In the early stages, when the morbid condition has not become too chronic, there seems to be every possibility of cure; especially if there is a prospect of a happy marriage. This latter is however, always somewhat risky, for if in such a case it should turn out later that the patient was already too far gone, then there would be two unhappy people instead of one. But if the morbid condition has made too great

* We physicians have always wondered why it is that consumptives are so often passionate in their sexual inclinations. This enigma may possibly find its solution in the fact that those who suffer severely from sexual abstinence are particularly predisposed to contract scrofulous and tuberculous diseases.

progress, all help comes too late; after all her disappointments, everything that may remind her of sexual things has become unbeautiful, or even hateful. Bitterness and tragedy are written in her face; one hears them in every tone of her voice, sees them in her every movement. And the unkind world, that so readily mocks at all suffering, calls her in derision "old vinegar-face".

But in the prime of life the mental suffering often becomes acute, even when no complications that might be termed a menace to life itself appear. For psychical disturbances may acquire a very threatening character.

Here I must devote a few lines to the subject of hysteria. This ailment takes on so many protean forms, and every practitioner finds so many variations of it in his clinical observations, that he forms his own definition of hysteria from his personal experience. This much is, however, certain, that in innumerable cases of hysteria, the continued enforced abstinence plays the most important part in its causation. At first the sexual abstinence occasions a loss of mental equilibrium, and in the course of time unbalances the central nervous system, which may give rise to the strangest symptoms, often accompanied with bizarre behaviour, which attracts attention to the patient. She suffers so keenly: And if no one seems to understand her, if no one sympathizes with her, she feels compelled to bring the most terrible charges against people and even to simulate the most alarming symptoms. We doctors have a great deal to put up with from this class of patients! In a few cases our remedies have some little success; in others no matter what one prescribes, nothing has the slightest effect; there are even cases in which drugs only do harm and aggravate the symptom. The most extraordinary cramps and irregular reflexes may also in reality render the patient's life quite unbearable and drive her to desperation. The family doctor may then diagnose "*globus hystericus*" without hesitation, while the patient in her despair of ever getting better, is often inclined to commit suicide to put an end to her sufferings. In another case, a typical erotically delirious patient developed epileptiform attacks, which usually originate from some deeper pathological condition.

Formerly the medical adviser could somewhat terrify the

patient and bring her to reason by threatening to send her to a hospital, but the modern refinement of hospital treatment is so well known that this weapon has been taken from us, and instead we even see patients who want to undergo major operations. Neurasthenia and total exhaustion of the nervous system occurs still more often than hysteria. Professor Krafft-Ebing, the celebrated psychiatrist, has devoted an entire work entitled "Ueber Neurosen und Psychosen durch sexuelle Abstinenz" (Neuroses and Psychoses due to Sexual Abstinence) to the subject, but Freud and his school were the first to demonstrate the real nature and relationships of these cases, by psychoanalysis. Sexual abstinence may really lead to the most serious neuroses and to complete insanity. The causal nexus may be distinctly traced through a certain parallelism in related cases.

There were three daughters in a respectable family. One of them was subject to hysteria, but the family doctor was able, by dint of constant attention to keep her in equilibrium; the second had a love affair with a bookkeeper; the third was for some time so mentally deranged that she could not be cared for in an ordinary hospital, and was kept at home, where she even annoyed her own father with her erotic importunities.

We find such cases most instructive, because we can thus observe how differently sexual abstinence affects three closely related persons. The first mentioned, the youngest daughter, was easily saned, the second refused to remain celibate, while the third daughter was driven by her intolerable nymphomania to attempt incest and was also mentally deranged.

I was called to another family where I found a severe case, a young and most excitable girl, who had been complaining that she was constantly pursued with amorous offers in her father's business where she was employed. From the next-door neighbour, who was also a patient of mine, I learnt that one of the young girl's sisters had on one occasion caused a terrible scandal at night with one of the young employés. The third sister, my patient went on to say, had been married but had lost her husband soon after; she told her neighbour one evening when she had been invited to tea with her, that she was longing to get married again; but the next morning

she was found drowned, she had thrown herself into the water. — Meanwhile I found that the young sister I had been called to see, was in such a nervous condition that we had to send her to an asylum. She got no better. The specialist who examined her stated that he had no doubt her symptoms were the consequence of sexual abstinence. So here we find the trio: seduction, suicide and insanity*.

The evidence of the causal factor is far better brought to our notice than in such parallel cases, when in pronounced cases a cure follows a cessation of the abstinence. I have seen this happen in a case that was apparently hopeless.

I had been medical adviser for many years to a wealthy family which counted several Catholic priests amongst its relatives. The daughter was a very pretty girl, who had always been remarkably healthy until shortly before the time when I was called in. The parents complained that for some time, about a year in fact, she had been very melancholy, and given to frequent fits of weeping. She got steadily worse. At last I found out that she worried, and thought herself lost because as she thought, a young chaplain had put her in the family way at an evening party.

He had only kissed her.

Very likely the young girl had had a fully pleasurable voluptuous sensation from the passionate kiss that the young man had given her, as often happens in such cases. But in reality she was in a perfectly normal condition and not pregnant at all. Although we assured her a hundred times over that if she had been enceinte, something would have been noticeable long before, as a year had elapsed since the incident, and that the medical examination proved that there was really nothing the matter with her, she only shook her head in a helpless

* One may readily understand how many girls, seeing no hope of getting married, get so sick of their lives that they end them, and this is a frequent result of chronic abstinence. Physiologically speaking, life is, and must always be, a succession of periods of pleasure and pain; if everything were always agreeable, it would not seem to us to be so; we must have contrast. Normally, both factors almost balance each other. But if one is deprived, from any cause whatsoever, of the enjoyment of one of the richest sources of human happiness, what else can we expect than a life that is no longer worth living?

manner, and continued to wander about in her father's house all day and half the night, a prey to melancholy and despair. A very experienced physician, a specialist in mental affections, was called in consultation, as the parents could not keep her at home any longer. We were of opinion that her internment in a suitable institution was absolutely necessary, and certified to that effect.

What, however, was our surprise to learn shortly after, that instead of sending her to the institution recommended, the parents had found a husband for her. Our young patient has, since then, always enjoyed the best of health as a wife, and even under the most trying circumstances never lost her balance.

I only learnt all these details when, sometime afterwards, I had a similar case of dementia to treat; that of a young lady who was only kept from suicide by placing her under restraint, and who had to be watched day and night. "For God's sake don't send our daughter to an asylum", begged her parents.

I related the details of the former case to the relatives of this second patient, and also to the gentleman for whom she had been an excellent housekeeper. Her condition continued to become steadily worse, and at last I considered it imperative to send her to an asylum. Her employer frequently went to see her on visiting days; and after a time took her back into his service, and the experienced observer could not fail to remark that the patient's gradual restoration to health coincided with an affectionate union between the two. Death alone put an end to their affectionate relations.

The most conclusive, however, are the less frequent cases in which the medical adviser taught by experiences such as those above mentioned, finds himself in a position to discreetly encourage an engagement or such a love affair as may be morally permitted, with a resulting cure as a direct consequence of the changed conditions. Absolute proof that the sexual abstinence was the only cause of the morbid state can never be adduced. But the experience that such an experiment leads to the patient's recovery, is certainly a contribution to our scientific knowledge.

I have been fortunate enough on several occasions to witness this, and under circumstances which leave no shadow of doubt

as to the efficacy of marriage. Sexual satisfaction has a decided therapeutic effect, even if the improved condition is only apparent so long as the sexual relations continue, and in proportion to the intensity of the same. If however the morbid condition is found to be of too long standing, and has become chronic, the treatment may be of no avail. Only the approach of age can then peacefully terminate the state of things.

In conclusion I must mention how great an effect protracted sexual abstinence may have on the intellectual and moral sensibilities of some sufferers, inevitably driving them to despair and profound melancholy, not infrequently also unhinging their mind. How many highly cultured people have been led, as a result of their endless struggle against their purely natural feelings, to abnormalities and perverse practices, sometimes giving way to the most frightful sadism, or even to rape and lust-murder.

My friends, the next time you read in your newspaper of a crime committed in a passionate moment by an unmarried schoolmaster or a celibate priest, you should have pity on the unfortunate man, as well as on his victim. Was the guilty man really wicked? No, he only lost control of himself for a mad moment. If he had been a man of low ideals, he would long ago have associated with common prostitutes; but he had fought down all such temptations, he had always tried to win the mastery over his passions, until one day he was off his guard . . . and then . . . the thing happened! All his remorse is then too late! The real guilt for these occurrences lies with our hypocritical upbringing, our traditional glorification of an oriental asceticism. We must all share the blame with him. Scientifically speaking the following points are the most important. Because the suffering entailed by sexual abstinence starts with nervous and mental disturbances, people were always inclined to think that the trouble was only something subjective, the consequence of suppressed longing or unsatisfied desire, or possibly disappointment over a presumably wasted life. But cases have often come to my notice in which the same distressing symptoms and dissatisfaction with life were observable in elderly spinsters who were innocent of all trace of sexual desire, who were indeed quite cold in this respect, and in these cases it became evident that any cure presented

far greater difficulty, because not only did these ladies not seek the remedy, but even avoided it.

This experience throws quite another light on the morbid picture. Quite independent of any subjective wishes and inclinations, the normal exercise of the sexual function is an essential condition of that proper development of our full health and our full vitality, to which we have so often referred in this work, and on which we laid special stress in chapters 26 and 40.

In view of the practical importance and the highly complicated nature of this question, I will endeavour once more to outline here the various deleterious influences concerned.

The more the energy of the vegetative growth approaches its terminal point in our youth, the more do we perceive a certain indifference and loss of energy or listlessness, a condition which may easily amount to depression. As soon as, with the arrival of the period of puberty the stimulus of sexual desire makes itself felt, this new stage of growth may easily cause in sensitive individuals a certain degree of exaltation, which then alternates with periods of fatigue. If later on, at the climax of our life-energy, in the prime of life, the sexual urge becomes so insistent that its suppression is felt to be an imperious necessity, then a compulsory and continued abstinence becomes a deeply-rooted evil resulting in depression, and this is made far worse by the harmful effects of all sorts of unsatisfactory substitutes for normal, healthy and regular sexual intercourse.

In those cases where the sexual urge is not felt at all by the individual, the due revival of the life-energy ceases to appear. Even when such asexual frigid women marry in later years, and cohabitation takes place regularly, this symptom of deficiency will make itself more or less apparent, because they never feel the least sexual desire, and have no idea what it really is.

But the morbid picture of the suffering entailed by sexual abstinence is by no means completed by the enumeration of the above symptoms; it only indicates the preliminary stage and the less severe cases. We see quite other symptoms, far less easy to diagnose in really grave cases. The effects of sexual abstinence, as we physicians observe them in unmarried women, often give the impression, with their typical chlorosis and cachexia, that one is in the presence of an auto-intoxication.

It would be highly interesting to inquire more fully into the causes of this impression; unfortunately we must be content for the present with mere hypotheses.

We may however, suppose the case to be as follows: adulthood is that particular life-period in which the special organo-chemical substances are poured into the blood-stream and are thus enabled to exert their important stimuli on all the tissues of the body. Those individuals in whom this phenomenon occurs in an insufficient degree, frequently display the loss of interest, depression and mental inferiority typically seen in eunuchs.

If however this function occurs normally, then in due course, perhaps through a cumulative effect, all the organs and body-fluids become so thoroughly permeated and saturated by the organo-chemical substances, that at the climax of our life-energy the sexual urge becomes manifest in an enormous degree. If in this case there is no biological neutralization of the individual organo-chemical toxins of one or the other sex, by the exercise of regular cohabitation or kissing, etc., (see p. 238*) it seems to me to be very plausible that as a result of the excessive one-sided effect of ones own endocrine secretions being retained, blood-poisoning, as in all other auto-intoxications, may readily occur. This hypothesis agrees with the known fatal properties possessed by all these endocrine poisons (see Chap. 4), which can only be directed into their proper channels, if they counter-balance each other, that is to say, if they neutralize each other biologically.

Further it is well worth while inquiring whether retention of secretions in the genital tract may not occasion auto-intoxication, just as it does in the urinary system and in the intestinal canal, unless the secretory functions are sufficiently stimulated by regularly repeated sexual intercourse. For we do not meet with the more serious cases of sexual abstinence in early manhood or womanhood, at which period the sexual urge is most pronounced, but only much later on in life.

Especially in the female organism this morbid predisposition seems to me not at all improbable (see p. 92); which would

* Thus we can thoroughly understand why masturbation is not a healthy substitute for coitus.

explain why the effect of sexual abstinence in woman shows so a much more definitely toxic character than in man.

For the layman, who perhaps is less acquainted with the effects of retention; I will firstly refer to the symptoms of auto-intoxication caused by retention of the urine in cases of paralysis of the bladder; and how very adversely our constitution may be affected throughout and arthritis when too much uric acid, or urates, is deposited and retained in the tissues. And if we remember how the fluid contents of the lower bowel are liable to asorption and thus are a prolific source of protean forms of auto-intoxication, we shall thoroughly realize the truth of the adage "*qui bene purgat bene curat*" (the best doctor is he who treats constipation the most thoroughly). In chapter 13 we have dealt fully with the pernicious results on the skin, of the retention of the contents of the minute sebaceous follicles and sweat glands.

Many readers may possibly think that if abstinence from sexual intercourse is fraught with such serious danger a voluntary or involuntary abstinence from child-bearing must have a very prejudicial effect on the maternal organism, for it has always been looked upon as the "*raison d'être*" of the sexual life. Experience however, does not bear out this view. On the contrary the somatic and physical damage and the dangers of pregnancy and motherhood unfortunately weigh far too heavily in the balance!

But no matter what the theoretical solution of all these problems may eventually be, the hygiene of the future will always strive towards the goal of an ideal mode of living; an energetic vegetative development, which will in due course be crowned by the most beautiful of sexual blossoms.

67. *Sublimation.*

What is meant by this word that moralists are so fond of, as though it were a magic cure for all the ills that follow on sexual abstinence?

The word itself is borrowed from chemistry. When solid substances such as camphor or benzoic acid pass from the solid to the gaseous state without intermediate fluidity, it is called sublimation, and many moralists expect from us that we should transmute our sexual urge directly into higher impulses; the longings of love are to be converted without the least sexual satisfaction into a longing for heavenly things. We however, wish to realise the love-life in its highest form of beauty, and thus attain, step by step, the most lofty regions of idealism.

To employ another metaphor, there are people, who have actually had the cruelty to put out a poor little goldfinch's eyes, so that the bird shall sing better, but for ourselves, we would far rather hear it sing in freedom on the branches of some woodland tree, from sheer happiness, even if its song were a trifle less admirable.

In the foregoing chapter we have seen how so many people, at the very best period of their lives, suffer from depression and dissatisfaction simply as a consequence of a too protracted sexual abstinence, and how deeply miserable and thoroughly disheartened they may be when vanquished in the conflict. But even those who issue apparently victorious from the hopeless fight against their natural passions are generally to be pitied, as something narrow and "old-maidish" persists in their character, an inevitable one-sidedness, which we shall now study a little more closely.

First of all there comes to my mind the case of many a good spinster getting on in years, who has experienced many disappointments, and has ended by renouncing everything. Once upon a time the sexual life may have inspired her with great hopes, but in the end it has brought her only sleepless nights and bitter awakenings. Now at last she feels she has had enough of it. She cannot and will not nourish any more

false hopes, everything sexual is most distasteful to her. She will be more reasonable in future, she will seek consolation in "higher things"; she still has plenty of energy and will employ it along other lines*.

She is fitted for something superior: for music, theosophy, or other form of mysticism she feels spiritually exalted. As time goes on, she feels great sympathy for those similarly situated, and is quite at home in their society. She pursues these new ideals with all the enthusiasm of passion; for the fire of her primitive feelings is by no means extinguished. Her passion is only sublimated, it has been directed into higher paths. If she were really dead to the world, her renunciation would be of a more resigned character, something like the calm of people in advanced old age.

And so at last, renouncing everything base, she has attained those "higher things". The fire of youth which had always stirred her so deeply, has now become completely sublimated. This may indeed prove her salvation**, she feels safe and protected, and rises spiritually higher and higher, far above all earthly things and desires.

It is no doubt fortunate for her, but not quite so fortunate for science and art, and all those pursuits into which she has thrown herself with such ardour. Whatever she does in this direction, will be a consolation to her soul, and she will later on recommend it to others, fresh, unspoiled healthy young persons, for whom such things may actually be dangerous. That which may be good for sick people, often makes healthy ones ill. For in this elderly woman, rescued from the shipwreck of life, the healthy mental equilibrium has been upset, and the harmony between body and soul disturbed, and this stamps all her actions, all her proposals for others.

* Because indeed it calls forth the finest propaganda for the life beyond, a transcendental philosophy has proclaimed sexual abstinence to be the highest of virtues, whereas among the primitive races it is looked upon as the most terribly degrading of all sins.

** If only she does not — as in cases I have actually seen, — become so highly sublimated as to completely forget herself with friends similarly sublimated, and sink into the depths of immorality without intending it or suspecting it; for the one ecstasy may so insensibly be transformed into the other.

Now we can more readily understand why there is so much morbidity in modern literature and art, so much one-sidedness in modern science. All these sexually crippled persons, whether men or women, with their devotion and their manifold talents would have produced far better and saner things, if they had been favored with normal happy satisfaction of their natural intimate needs. How many fresh young minds and souls have been stunted and ruined through this sexual privation! And yet many are proud of this one-sidedness, as if it were really the summit of superiority.

Yet art is so closely related to the sexual life; both are so old, even older than mankind itself, both so intuitive, so impulsive, so unlimited, so little subject to reason! Art and the love life together have resisted all the assaults of Fate. In times of tyranny, both Art and Love were cunning enough to escape. Hopeless love and boundless passion have both found their expression in Art; the despair of slighted love, the pangs of hopeless passion, the renunciation of earthly happiness, have all left their indelible imprint on Art.

In the old sacred writings we find the evolution of the human heart depicted true to life. In the book of Genesis, we find probably the most ancient documents of the higher life. Here everything is genuine, and the sexual life is most highly honoured as the pulse of family life; it is all spoken of with the utmost impartiality and respect, and without restraint; nothing is omitted, good and evil alike are spoken of frankly. And now let us compare this to the last link in the chain of religious dogmatism, the worship of the Virgin Mary. Here everything sexual is banned! Only the celestial expression beams from the serene countenance of the Mother of God! She is a wife, indeed even a mother; but she has no sex. Here is the celebration of mystic nuptials: it is the sublimation of earthly love. Oh! this warm voluptuous glow of the Middle Ages; with which so many pious monks, their bodies wasted by long fasting and penance, implored the consoling love and pity of the Virgin. And so many pallid, anaemic, ecstatic nuns kneeling in passionate adoration of the figure on the cross; their heavenly spouse! But we must not enquire how much physical and mental anguish the poor creatures must have undergone before reaching this ecstatic state of sublimation.

To attain this morbid condition, they had had to sacrifice the world of beauty and pleasure to their ideal, and to deny themselves everything.

Thus the period of the Middle Ages was morbid to the core. Take the Dutch and Flemish inhabitants of the Netherlands, for instance; it was only after they had shaken off the Spanish yoke in their great fight for freedom, that their painters were free to put on their canvases all the natural joy and humour of life as it really is.

Yet even to day we see the same black cloud hanging over our heads. It is with a heavy heart that we observe the tendency shown by so many people, in every walk of life, to imitate these errors of a past age, and to dethrone our ideals instead of allowing them to stand in all their glory and to blossom into beauty.

As it was in the realm of art, so it was in science and philosophy. Our whole outlook, like our sexual life, is still suffering from dualism, theoretically despising the material, instead of frankly recognizing it as the foundation, on which all higher things must be based. Just as the sublimation of the sexual life gave birth to mysticism in the world of art, so in this case it leads to dualism, which causes the total destruction of all connection between higher and lower things. Thus the higher aspirations, torn from their foundation, must inevitably wither and die like a rose torn from the parent stem.

The primitive dualism of savage races, with their belief in dreams, their animism and their legion of evil spirits, is only childish ingenuousness and ignorance. The later dualism of the classic world had, however, a deeper origin in the division of economic life: in the teaching of Buddha, as a protest against the voluptuousness of court life, and in the teaching of Plato, because the latter was the protagonist and philosopher of a slave-state. But it was the asceticism of the Middle Ages, with its chain of monasteries and its enforced celibacy, which really turned dualism into this black and heavy shadow which still lies like a weight on the naturally joyous soul of man.

Our bodies and souls will be developed harmoniously and united in a healthy outlook, only insofar as we succeed in throwing off this pestilential influence.

68. *Degeneracy.*

It is now a very unpleasant task, but my duty, to refer to some of the forms of perversity and erotomania that come to the surface here and there in the sexual life. The general practitioner in every big town or city meets with such cases in his practice, and comes to know them only too well. From the scientific point of view, pathological deviations from the normal are of less importance than a knowledge of the normal itself; the endless variety of individual abnormalities have not the fundamental importance of the normal. This must always be taken as our standard for all observations. Besides, all these pathological complications are much more difficult to understand.

How often we observe, in cases of senile degeneracy, old people who, instead of normal sexual pleasure, find a dirty delight in playing with their own excreta, when they have reverted to a second childhood, or relapsed into complete idiocy*. And how cruelly these aged degenerates inflict moral and physical suffering on their unhappy partners, and even on themselves, solely in the fallacious hope that these abnormal stimuli will awaken a temporary return of their own lost sexual forces; this may even lead to lust-murder in the violation of women or children.

And then what strange association of ideas, thoughts and feelings it is when they feel sexually excited by the handling or contemplation of a lock of hair, or of an article of female clothing, for instance, and when no other objects possess the least charm for them, or have the least effect on them sexually! In former times all such cases, as soon as they led to serious acts, were looked upon as misdemeanours; the Mosaic law, for instance punishing all connection of men or women with animals with death. KRAFFT-EBING and other psychiatrists however, have studied this question more

* Little girls sometimes wet the bed when they take to the habit of masturbation, while in little boys, on the contrary, habitual bed-wetting often disappears as they reach the age of puberty; (see page 135 and footnote to page 124).

closely, and are more and more inclined to the opinion that these sexual abnormalities are generally the result of psychic derangement, and frequently of deep-seated mental trouble.

Thus our judgement of these people has become severe. And further investigation has also convinced us that in most cases we may blame false education and training, erroneous impressions received in childhood, or perhaps simply an individual natural peculiarity*.

KRAFFT-EBING for instance, mentions a case of erotic cruelty in a young man, who experienced sexual satisfaction for the first time in his life as he was wringing a fowl's neck. And in my own practice I remember a case of so-called "fetichism", that of a young man who never obtained satisfaction unless he was holding a lady's slipper, which can only be explained by the fact that his first emission occurred when fondling one of his own sister's slippers. Of course, one must also be somehow unfavourably predisposed and badly trained, if one can be so exclusively and permanently influenced by a single experience, or even if it occurs repeatedly.

And the feeling of necessity for the dirty and the obscene in word and deed may also easily arise from a false training in one's youth, if, as so often happens, all things sexual are stigmatized as the height of impropriety (see p. 238). And it may be also, that with such erroneous, over-refined training, all actual contact with or experience of dirt and violence are avoided as much as possible, so that when these actually occur later, they possess the attraction of novelty, as though they were something quite original; but this is a rough sort of stimulation, only to be played as a cynical trump card at the end of one's life, when all normal, agreeable and tender charms have lost their power.

These errors can now be better avoided, because new light breaks in upon the aetiology, i. e., the causation of such cases, and such unfortunate degenerates are more humanely treated. If for some reason or other they are brought up before the judge, they are now more likely to be sent to a suitable home than to prison.

* We have already referred on page 380 to the erogenous and erotofugal zones in the normal sexual life.

And the farther we pursue our investigations into the chain of causes, the greater is the possibility of a complete cure.

Although an erroneous education or training is frequently the cause of sexual aberration with improper behaviour, yet in other cases the *causal nexus* is quite different, and it is such cases to which KRAFFT-EBING has devoted special attention. On page 385 we referred to something similar in the more serious forms of nervous affections arising from excessive masturbation. In serious cases of sexual morbidity, the primary cause often proves to have been some affection of the central nervous system, and the psychopathy can then therefore only be regarded as more or less casual manifestations of the functional morbidity.

The lay public, however, believes just the contrary to be the case, always expects a cure from an appeal to reason and throws all the blame on the sexual life itself. They are just as wrong as the freethinkers who fanatically blame religion for all religious mania. This is quite a fundamental error of principle. The patient, whose central nervous system is affected, who is suffering for instance from a certain feeling of nameless anxiety, projects this feeling of fear, just as we do in our dreams (see Chap. 36) on all sorts of persons and objects, according to circumstances. One imagines he or she is lost for all eternity, another that he is ruined or is continually being followed, etc.

Then there are the well-known cases of megalomania, when a man thinks he is a king or a prophet, a genius or a millionaire, just as there may happen to be associations of thought or feeling in the one or the other connection. So different persons suffering from some form of dementia commit, one a theft, another a murder, a third some sexual misdemeanour. In all such cases it is useless to reason with the patient or to try to teach him better; we have only one of two things to do, either to cure him by treatment in a suitable institution, or to render him harmless for the future.

There are also many cases in which a vicious circle can be found; where degeneracy is apparently the outcome of evil habits or bad training, and degeneracy itself, on the other hand, gives rise to bad habits and culpable behaviour.

For these reasons, it is often a difficult matter in criminal cases to decide whether the case is one of real criminality, or if it should not rather be regarded as pathological. We must therefore not be surprised that the criminal judge often punishes these cases very severely when they are really rather to be deplored, for a more pedagogic and ethical treatment of the case might lead to a cure or rescue, and cause far less public scandal. It is a fact that the more heavily such cases are punished, the more they are liable to become epidemic.

On the other hand it has often occurred that only moral blame has been cast on many culprits who have wittingly caused the most terrible harm, such for instance as the propagation of venereal disease or an undesirable pregnancy, whether in or out of wedlock.

The law is, however, silent in regard to such really criminal acts; and it is noteworthy that these laws, as they stand, have been exclusively drawn up by the male sex in almost every country. Since the year 1917 however, in fifteen of the States of North America, regulations have been introduced with the object of preventing the propagation of dangerous diseases by heredity; but in every part of the world this danger can be coped with by the isolation of the afflicted person in some suitable institution or penitentiary, and by giving him the choice of imprisonment for life or of a simple sterilising operation.

Such progress has now been made in surgery, that it is an easy matter, and free from all danger, to render a man or woman non-reproductive. The seminal ducts in man and the fallopian tubes in woman are resected and the ends ligatured. When this operation is performed on adults, where the sexual functions have already been normally exercised potency and sensation are not changed by the operation, whereas the reproductive faculty is completely destroyed. When the operation has been performed, such persons only require a little moral support from the members of their own family. They no longer present the slightest danger for the community.

These facts should be widely known amongst all parents and teachers, and especially amongst ethical leaders, so that they may better realize their own responsibilities. If, now that we know these things, we wilfully shut our eyes to them,

and try to hide and discredit the sexual urge, as has been vainly attempted for so long, then we are guilty of connivance in all the dark, criminal, pathological results of our own neglect.

If the official moralists can find no other advice to give than that of continence and abstinence, passionate adults are driven to despair and to the most reprehensible acts, which may lead to terrible retribution later on. Excess and privation may both lead to equally deplorable results.

It is impossible to deny the existence of the sexual life; the only and the obvious thing to do, is to direct it into proper channels.

69. *The Feeling of Shame.*

We now come to the most intimate feelings of our psychic life. This is the realm of secret and magical powers, dating from the origin of humanity; powers which have more influence over us than any others. This occult force is like a fairy god-mother watching over us from our childhood, until we are old enough to shift for ourselves; and although she makes us rather timid of the good things, she often helps us to avoid the bad.

Nothing could be more dangerous than to obliterate this feeling before we have found some better guiding principle. And it is just on this account that I have left the final treatment of this delicate subject for the end of my book. Now however, we must probe the subject to its depths, in order that we may replace this unconscious urge by a conscious will power. This is no light task. I trust that the reader will therefore forgive me if I now deal with the matter at some length.

Every powerful emotion drives the blood with renewed energy through our bloodvessels, and we have already mentioned in Chap. 20 how the sexual life especially is liable to affect our emotions and to cause congestion in our circulation. It is more especially the sexual impressions that so frequently conjure up the rosy blush on our cheeks. And the shyer a child is, the more charming we find such blushing, which becomes much more intense at the time of puberty, even making us lose our presence of mind.

The intense sensitiveness of the youthful soul is often betrayed by it. Generally it is caused merely by some little surprise, because one finds oneself, for instance, suddenly in an unwonted situation. Sexual impressions may easily give rise to a certain timidity, if the sexual has developed late in life, and only become customary in old age, so that it has lost its first natural charm; though indeed many an old roué at this latter stage of life, falls into the other extreme — a coarse cynicism.

But I do not pretend that this particular bashfulness is

always agreeable for the person in question. We can all of us remember some such experience in our early youth, when every time we had a fit of blushing the heart beat so fast that we could scarcely breathe at all. We then used to feel quite confused and stupid, and did not quite know what we were doing; and the more we blushed, the worse it was.

Especially when young people fall in love for the first time, this bashfulness at the unaccustomed situation may make them feel most awkward. And there is something paradoxical about it too: for the very presence of the beloved, instead of helping us to feel at ease, may so trouble us that we are seized with fright; we had such a lot to say, but cannot speak a word; we would so like to show the greatest attention, instead of which we act most foolishly.

And the young people who are most subject to this sort of thing are those from whose training co-education or friendly contact with the opposite sex has been the most carefully excluded, and in whose case safety has been sought by keeping them from the "wicked" world. And on this account they feel a double need of sympathy and affection, but all is wrecked on the rocks of this stupidity! Many a tenderly blossoming young affection is thus nipped in the bud; and although it only leads to misery and disappointment, many of them seek consolation in loneliness.

Especially, also, must those young people suffer from this travesty of modesty, who from a lack of natural modesty try to behave exceptionally well, and yet are not so blinded by immodesty as to be unable to notice their own faults.

Very often in such cases it is also only a concomitant symptom of sexual abstinence.

So it is not at all difficult for us to understand how it is that a hardened Don Juan generally meets with such success with the ladies; he has long forgotten how to blush and is never at a loss! Really, this indefinite modesty is of very doubtful value in our education. And it has a still worse effect when we find ourselves in bad company, and we need all our strength of character not to give way to temptation; our blushing timidity leads us to brave it out, and to do the same as the others so that we shall not be thought stupid.

These cases of shame from embarrassment do not really

give us a true idea of what is called modesty*, for so far it has only been a certain shyness at finding oneself suddenly in an unusual situation, and not anything of which we have any reason to be "ashamed" in the literal sense of the word, because we feel that we have done something wrong. We are coming to that now. Let us take a simple example.

If we are caught doing some little thing that we should not, we are frightened at being discovered and at the threatened punishment. We then blush deeply from shame, in the narrower sense of the word.

We feel a certain shame whenever we are suspected, rightly or wrongly of anything disgraceful; and this may appear to be an evidence of our guilt, even when it is really a sign of the most complete innocence. We even feel a certain degree of shame, when we only think of doing anything common, or mean, or disgraceful**.

So it is modesty that warns us of the approach of every temptation; something like the warning that pain gives us of some physiological danger to our bodies. Both warnings are life-saving a hundred times over, and are the first condition necessary for self-preservation. When once the sick man no longer feels his pain, or one is so far on the downward path in life that he is lost to all shame, then both have gone too far to be rescued.

And yet the study of medical jurisprudence, that borderland of the medical and legal professions, teaches us that the occurrence or absence of this feeling of shame, although possibly of some use in the less serious cases, may lead to the most erroneous conclusions in really serious cases, just where it ought theoretically to be the best indicator. Even the tenderest of characters may finally appear almost heartless or even perfectly indifferent, actually through an excess of remorse and desperation; like so many unmarried mothers,

* The german word *Schamgefühl* literally means "a feeling of shame".

** Here we see at once the unnoticed transition from shame due to guilt, to shame due to an unwonted situation. Quite nearly related to this, and very charming, is the aesthetic blushing simply from anxiety that one may call forth unaesthetic ideas, which then broadens on a higher aesthetic plane into a studious avoidance of everything that might possibly produce a disagreeable impression on others.

who after nearly nine months of worry and despair, strangle their newly born infants so that they shall not cry out and betray them! Then when they are before the magistrate they frequently seem turned to stone.

Because this blushing from guilt, cannot be distinguished in appearance, from the so-called blushing from embarrassment, we must not be surprised that both are called by the same name, and that we are so often really misled in our judgment of innocence or guilt*. For both of them are accompanied internally by similar palpitation and a feeling of anxiety in the region of the heart. In very serious cases it seems to us, as if our heart would cease to beat altogether it very nearly does so, and then the deep blush on our cheeks suddenly fades away, and we are deathly pale. But often before it proceeds as far as this, the reflex comes to our relief, (see page 142) and the tears flow.

This shame-feeling from guilt is the most faulty grounding that can be imagined for the moral training of the young. For when travelling away from home, or in a big city where one is unknown, and in so many different circumstances where one is unobserved, in short, wherever the fear of discovery is lacking, many a man whose morality only depends on this variety of shame, does the most disgraceful things, for which he sometimes has to pay all his life long. So it is but a broken reed when one the most needs moral support.

It is a most remarkable fact that very often the things which in a lower degree of civilisation cause fear of punishment, in more highly civilized states cause only a certain amount of embarrassment, and finally only false modesty, and thus cease to possess any importance whatever. We must therefore take the history of evolution into due consideration before we can study this question thoroughly. We shall then see that the feeling of shame really occupies an intermediate position in an evolutionary series which begins with motives of fear, and ends with motives of reason.

And especially when we come to investigate these vague, half conscious, impulsive feelings, we must delve far back in

* And perhaps this is why the sexual life appears to our consciousness as though it were something sinful.

evolution; just as in our own analysis we must start with our babyhood. Let us then start with the animal world.

In the lowest species of animals we find only the simplest reflexes*.

In many insects the most noteworthy is the paralysis from fright that simulates death and thus is often the means of saving their lives. If for instance we threaten to catch a little clothes-moth it falls to the floor as if dead, and lies lifeless for a while, thus escaping death. As we go higher in the evolutionary series, we find this paralysing effect of fear become rarer, and the reflex fear picture becomes more and more defined and reasonable.

When we come to those higher species of animals which are gregarious, we find that when one of the members has attacked another, or has harmed the whole group, it is severely punished. Here of course, there develops a fear of punishment actuated by reason, a feeling of anxiety that is not visible in animals by any form of blushing, in them the skin is still covered with hair. Human beings do not blush in hair-covered parts either but they suffer from palpitation of the heart. And what a depressed expression and attitude a well-trained dog will take on, when he is scolded, or when he knows that he has done wrong! But it is only in man, that this impulse receives a higher ethical inspiration and a conscious motivation which we term: modesty, remorse and penance. Only in mankind is this feeling of shame betrayed through a reddening of the skin of the face which, through psychic mimicry, has become refined, and mirrors the soul. This evolutionary tendency may be observed in the history of mankind. Fear and terror were the prime motives for good behaviour in the most primitive stages of civilization, religion, morality and jurisprudence; the doctrine of the most hellish punishments was preached; while no cellular segregation in

* The first lessons that a cat gives her kittens for instance, is only a series of reflexes. Animals teach their little ones more because they grow up with their parents; savages teach their children, because the sons work with the father and the daughters with the mother. In this manner the offspring imitate all that they see the parents do. From their earliest days we instruct our children systematically in the experience of mankind, and as the highest stage, the connection between causes and effects.

prisons is regarded as a studied and refined form of cruelty. Only later, with more certain conditions of life, higher forms of justice and improved education, we are gradually reaching a stage of less unstable equilibrium, and the higher ethical motives and the motives of reason become more prominent.

I shall now endeavour to cite a few examples of how in the course of time, the human shame-motives have been modified corresponding to the stage of evolution, to living conditions, to the security of the laws, and to improved education.

In the primitive state of nature, when our savage forefathers constantly had death from hunger or violence before their eyes, all the various kinds of bloody ceremonies and customs then prevalent, such as human sacrifice and the eating of human flesh, were only reflections of this conditions, and these customs were perhaps indispensable for the preservation of the tribe. Any man who rebelled against them would surely have been put to death, or at any rate would be in constant fear of discovery. But gradually, as the economic situation improved, these usages came more and more to be perpetuated only as traditional festivals; and anyone who tried to evade participation in them was only ashamed before the others on account of *differing* from them. As man reached a still higher stage of development, human consciousness of higher things led him to abandon such atrocities and to hold the view that fear of giving up such manners and customs was only false shame; until at last nothing is left of these traditional festivals but a few symbolical mysteries and sacraments whose origins nobody knows.

Another example. At first, the safety of a tribe, and of course, that of each of its members, were only guaranteed by a complete solidarity among them; and at this primitive epoch there was no other way to keep this intact, except by forcing all the members to act similarly and simultaneously in all circumstances. Any failure to do this was necessarily regarded by the others as high treason, and was swiftly followed by exemplary punishment in the presence of the whole tribe. Anyone who had so rendered himself liable to capital punishment perhaps died at once from consciousness of his own guilt.

And now, when we feel it our duty to act in defiance of

public opinion, we know very well that the shame that prevents us from doing so, is false shame.

Since, in the course of its evolution, the shame-motives have undergone such essential changes, it is quite evident that not every individual and class living in the same locality, and still less all the different races and sects that go to form a nation, can possibly have passed through the same stages of evolution with the same rapidity; their living conditions are far too varied. So in the conception of shame there develop sharp boundary lines between people at different stages of moral evolution, which often conflict most bitterly.

Now we can far better realize the danger of taking the feeling of shame as the foundation of ethical education. It is certain, for instance, that when a young man who has been brought up in a quiet and retiring little provincial town where rules of modesty and shame were instilled into him, comes up to town and is thrown into cosmopolitan society, he will surely not only throw over the shame-motives of his early days, but also others which he should always hold sacred.

The feeling of shame is honoured as the foundation of morality by those people who still affirm that one is only moral and correct when conforming to the traditional and universally accepted etiquette, morality or custom, a principle of morality that excludes in anticipation all evolution of the individual to a higher ethical standpoint. In such circles, false modesty is encouraged and held up as the most laudable of all virtues, so that they may wear the halo of extraordinary morality or of aristocratic ways, while in reality all this is only a travesty of virtue. Thus the so-called feeling of shame becomes a barrier against which all real progress founders.

And the shame of nudity is quite typical. Formerly, when a family was so poor that the children were forced to run about bare-foot like savages, even in inclement weather, they felt terribly ashamed of their poverty; for of all social transgressions, none is so great as poverty.

Among those people who are a little better off in the world, it is considered perfectly shocking if they are not fully dressed, and when they are caught in the midst of their toilet, incompletely attired, they feel frightfully embarrassed before strangers.

Now however, we have arrived at an era when the richer folks

proudly lay aside certain articles of clothing which are useless from a hygienic point of view, but which were formerly held in high honour. They can thus flout public opinion, because everyone knows that they are not at all poor. So now our children run about very often with naked legs, and our young men without hats or caps, although in former times the head was covered (except during prayer) as a sign that one was a free-born citizen. And false shame in the presence of nudity is also beginning to disappear.

Only, at least in our cold northern climate, bashfulness in regard to denuding the whole body will persist for a long time, from reasons of expediency. For as soon as we throw off our last articles of underclothing, we feel all the currents of cold air as something that is almost always uncomfortable, and even disagreeable (see p. 276).

And to this must be added another motive actuated by our reason: the exposure to view of our sexual organs, which may lead to other complications. For in females it shows their fitness or otherwise for the married state, and in males their actual sexual feelings at the time, which in the presence of third parties may cause a suspicion of wilful provocation, or at any rate, the most undesirable associations of thought and feeling.

In this case there are not only the shame-motives of embarrassment to be taken into consideration, but also serious motives of reason, which in many cases render it a duty to observe the greatest reserve and discretion. And yet, in family circles, and in the world of art* and science, for instance in medical consultations, all this shame of nudity has long been recognized as misplaced modesty, unless special contra-indications exist in these cases.

So now we find ourselves back again on our sexual theme, and here above all the feeling of shame has always reigned; but here also the force of natural evolution has worked the most striking changes, which are still progressing.

Originally, the sexual life was not so much source of friendly sentiments, as a focus of animal desire, an endless source of

* See the artistic edition of "Ideal Human Forms", seven volumes of which have already appeared in the "Schönheit" Verlag, proprietor Richard Giesecke, Dresden-A. 24.

envy and conflict, leading to the use of force and murder, and naturally of shame and a feeling of guilt.

Later, with the advent of a more regular social and sexual organization, the sexual shame-feeling is more especially produced if one has offended against traditional or conventional moral laws, whereby one soon acquires a bad name or may be involved in the greatest difficulties. And sometimes, if one has been informal or impolite, though often this is only false shame.

These various sets of shame-motives are as yet but little eliminated from our sexual life, because, as we mentioned at the beginning of this chapter, the sexual urge occurs so late in our lives, and therefore always seems to us something unusual. And this is why, in the public eye, everything sexual is essentially shameful*. And these vitally important organs have been dignified (in the Latin and German languages at least) with the epithet of our "shame" — (*Pudenda* and *Scham*). Shame! Why, we should only feel ashamed that we have wandered so far away from Nature. Evolution has certainly still a long way to go.

Now that we have read this review of the evolution of the feeling of shame as a general manifestation of the gradually increasing moral feeling of mankind, the way is cleared for a better understanding of our individual conception of what shame is. The most delicate touchstone of our own ethical viewpoint is the manner in which we regard this feeling of shame; and we shall thus be able to improve and to adopt a higher personal standpoint.

When we were quite young and felt ourselves dependent on our environment, we were ruled by motives of fear and sensitiveness, and this cost us many a bitter tear! But we have forgotten all this years ago. And because we idealise everything that belongs to an earlier state, and cast a halo

* The principal reasons why in a mixed company we avoid speaking of sexual things and why we should always do so, are not because it should be regarded as anything unclean, but rather because it is so tempting, really too "lovely"; something like the feeling that prevents us from talking of our most intimate and ideal thoughts to the first-comer, and also because we fear so terribly that we might be misunderstood (p. 342 and 346).

around it, although as adults we have our consciousness of being quite grown up, we have not lost the habit of surrounding our childish false modesty with its halo.

As we grew up, we have always sought to be more and more free and independent; and when finally we really become adult, we studied cause and effect and tried calmly and worthily to master our feelings*.

As far as we were able to accomplish this, our shame-motives took less and less importance in our lives, until with our advancing years they ceased altogether.

So long however, as hot young blood rushed through our veins, blushes suffused our cheeks, sometimes at awkward moments, with varying intensity and from the most different motives, which depended upon our education and moral development. How different the case may be: a terrible fear of being caught at something we ought not to do, bashfulness if we accidentally say something improper, and that false shame that we have of saying or doing anything not in accordance with custom, and so on.

And only now do we fully realize that that feeling of shame is not the highest ideal that we should really strive after. On the contrary, it is our duty to avoid everything that we could possibly be ashamed of; indeed we wish also to entirely conquer all false shame, and to rise superior to it. The more we bring our sexual life under the control of reason and of our full consciousness, the more will this vague feeling that we call shame retreat into the background, with all its poetry and its danger.

The higher emotional motives will then take its place: an aesthetic refinement of feeling, a desire not to wound others, an enthusiasm for all that is good and that can raise us to higher things, and especially enthusiasm for pure love. In this way the blood will circulate more warmly through our veins; without the slightest anxiety or shame; only the lofty aim at a higher and greater life-energy.

* It is an universally recognized fact that, generally speaking, our choice of a life-partner made in extreme youth is guided solely by the feelings or emotions, while a marriage late in life is almost always one of reason.

70. Conclusion.

The Sunshine of Life.

In the last six chapters we have discussed the ways in which the love-life may be overcast. Although the delicate morning-mist of modesty may sometimes enhance the brightness of love, the fog of ignorance, and the black thunderclouds of immorality and lust may unfortunately totally eclipse the light of day, and fill our hearts with trouble and anxiety.

Yet, although the sun may be obscured by clouds, we cannot deny that it is still there, and for this reason I do not wish to close these pages with the melancholy subjects that have filled the last chapters, but rather to cast a farewell glance over the whole panorama that shows us the sexual life as the focus of psychic life and the summit of the curve of our life itself.

Within us we have always felt this, every time that the sexual urge has stirred us deeply; but we scarcely dared to admit it. Modesty was the cause of this. And then our whole academic education forced us into the path of a prejudiced intellectualism, and we felt that to be very cold, for our reason affords us light, but light without warmth. And old honorable traditions were there to punish us, as though a longing for sexual affection were something sinful, and sexual passion a temptation of Satan.

Throughout the whole of this work however, the beauty of the sexual life has been clearly emphasised, as we have always felt it, whenever our hearts have beat joyfully from the charm of love. Now we are more content with ourselves, and we shall no longer nourish the wish to stifle our sexual lives, but shall devote every effort to render it a thing of beauty. Now when the flowers bloom and the birds sing, we join in with them and feel the same intoxicating joy of living, and our life is a life of sunshine at last.

Written words are too feeble to express the enthusiasm of love. Even the poet is scarcely equal to it. The nearest approach to an expression of this wonderful feeling and joyous enthusiasm, is through the most spiritual of the arts,

that of music; from the mysterious intoxication of the oriental Gamelan to the most charming of our sentimental songs.

And thus there comes to my mind the wonderful Ninth Symphony of Beethoven, with the Ode to the ecstasy of Love at the finish:

Joy, beauteous spark of the gods!

Love, a shaft of Light from Heaven!

The late Dr Johannes Rutgers, 1850—1924.

While the foregoing pages were in the press, the sad news has reached us of the passing away of the esteemed and beloved author of the original work "*Das Sexualleben*". His genial nature, of which we as publishers and translators have had many proofs, in his letters to us, endeared him to the thousands in his native land, in Germany and in Switzerland, where he was well known as one of the most active members of the Zürich Society of Natural History (*Naturforschenden Gesellschaft, Zürich*).

His son, Dr. F. J. Rutgers, at present practising in Zürich, and himself member of the above Natural History Society, has with filial piety written an encomium of his regretted father's life and work, which appears in the transactions of the society. We give a translation of the same by Mr. Clifford Coudray, who has also collaborated with the late Author during the last two years.

"Johannes Rutgers, M. D. (Leyden, Holland) was born in the little Dutch village of Hallum, in Friesland, the 5th of 6 children of the local pastor. Both father and mother were of old and learned Dutch family, and they were his first schoolmasters. Like Cornelia of Roman fame, the good mother taught her sons herself, and under her able tuition, the young Johannes matriculated at Groningen University. He was a lover of nature even at that early age, and threw himself with ardor into the study of plants and flowers and insects. This is reflected in his greatest work, "*Das Sexualleben*" when he refers so often to the analogy between plant life and that of man and the lower animals. When 22 years old he prepared for the church, and had terminated his theological studies with success, although too young to be appointed to a curacy in Holland. He got his first call at the age of 24, shortly after his marriage with Cornelia Abresch, daughter of a clergyman also. By her he had four children.

Soon after this marriage however, he resolved to take up the study of medicine, first in Groningen and later in Leyden, where on the 7th of July 1879, he took his M. D. degree.

He then bought a practice in Rotterdam, where he worked untiringly in the interest of all his patients, both rich and poor, and his sound good sense, his unfailing patience and general loveableness, led his patients one and all to cherish the greatest affection for him.

His rule of life was: to be of use in the world, to help the afflicted. Personally he was incredible selflessness, and simple in his ways. Apart from his practice, he devoted himself exclusively to natural history. For instance while he was at the busiest period of his extensive practice in Rotterdam, he experimented, in the year 1887 with the digestibility of various kinds of vegetable albumens on his own body. For whole months at a time his only food consisted of carefully weighed quantities

of vegetable albuminoids, completed only by the weighed quantities of the other indispensable food-stuffs, free from albumen.

After the death of his first wife, he married, on the 3rd of August 1885, Marie Hoitsema, and their life was a most happy and united one, right down to his recent death. Frau Marie Rutgers took the liveliest interest in all her husband's work and experiments and cooked and weighed out the peas and beans etc. for her husband's repasts, while she cooked other things for the children, sharing the doctor's meals herself. Frau Marie was also celebrated throughout Holland as protagonist of Woman's Rights. The results of these food-experiments on both husband and wife (that hitherto had only been made by Professor Voit of Munich on dogs) have appeared in Kühne and Voit's "*Zeitschrift für Biologie*", München. Professor Voit wrote at the conclusion of these reports: It needed a Dutchman's patience to carry this out.

For many years the late Dr Rutgers was Editor of the "*Niederlandisches Medizinischen Jahrbuch*" and conducted the scientific reports, also those on new and old pharmaceutical preparations and posology with distinguished success.

In the month of May 1904, to the great regret of all his patients, Dr. Rutgers retired from his great practice in Rotterdam and settled in the Hague, in order to consecrate the remainder of his useful life to pure science, that of the Sexual Life being to him of primary importance. His observations during his long years of practice had provided him with rich material for such a work. He became celebrated for his pioneering in the questions of Eugenics and Birth Control, to combating Prostitution and Venereal Diseases. He devoted not only his time, but gave large sums of money to the education of the masses in these essential things.

We have already given a list of his works on these burning topics, that have been translated into every European language, including Esperanto, especially his pamphlets on Contraception.

His greatest books are entitled "*Rassenverbesserung*" with its English translation by Clifford Coudray, M. P. S. London and L. Sc. Paris, both published by R. Giesecke, Dresden, and the still larger volume, in six parts, "*Das Sexualleben in seiner biologischen Bedeutung*" — translated into English by Norman Haire, Ch. B. Sydney, under the title of "*The Sexual Life in its biological significance etc.*" This work now appears in its complete form, published also by R. Giesecke, Dresden, and may be taken as a monumental compendium of the subject in the light of present day knowledge, illuminated here and there not only by the deep human knowledge of the late Dr. Rutgers, but also with sparks and flashes of his inexhaustible good humor and native wit.

Dr. Rutgers fell asleep at his daughter's home in Heerenveen, a little town in the North of Holland, and died as he had lived, respected, beloved, and at peace with all men.

Dresden, April 1925.

R. A. Giesecke,

Contents.

Part I. The Formation of the Organs.

Anatomical Section.

page

Chapter 1. The two Sources of our Sexual Life 11

The two testicles or the two ovaries, as the case may be, form the material foundation and the decisive criterion of sex. Displacement of the testicles like a hernia; sometimes with adhesions.

Chapter 2. Are we dealing with Glands or Tumours? 15

Definition of "tumour" and of "gland". We are here dealing with an embryonic tumour, the so-called "sexual glands", combined with the efferent canals of an embryonal or rudimentary renal system.

Chapter 3. The Embryology of Sexual Differentiation 19

This embryonic tumour may develop in either of two directions; and it is only when the child attains the age of puberty that he or she excretes either a few large reproductive cells or myriads of tiny ones. The excretory system is at first double (hermaphrodite); the dominating excretory system also determines the formation of the corresponding external genitals; the excretory system of the opposite sex remains rudimentary.

Appendix: Hermaphroditism in plants, in the lower animals, in the higher species, and also in man.

Chapter 4. The Organo-chemistry of Sexual Differentiation 26

Every organ — and every cell — has its own organo-chemical bye-products or secretions, which are carried into the blood stream by the lymph; many of them are neutral, others stimulating, and some highly exciting. Steinach's experiments in regard to sexual differentiation. There is a further question: whence arises the first appearance of the sexual differentiation in the embryonic tumour, or perhaps we might say in the spermatozoon and ovum?

Appendix: Comparison of hermaphroditism and homosexuality.

Chapter 5. New Cell-formation after Puberty 36

Parallel between the formation of semen and of pus. Sexual new formation is intermediate between the symptoms of growth in young people and the appearance of pathological tumours in the aged. The same intermedialry may also be observed in the excretions.

Appendix: In many plants there are also evidences of a summer growth.

Chapter 6. The Migration of the Newly-formed Sperm-cells	44
Anatomy of the testis, epididymis, seminal ducts, etc. Crescendo movement of expanding force. The sperm-cells first display automatic movements on issuing from the human body. Chemotaxis.	
Chapter 7. The Nuptial Flight of the New Generation of Cells . .	49
An individual swarming out of these unicellular organism. This is the sexual phase of cell-life, which may later on become once more modified into a multicellular vegetative phase.	
<i>Appendix:</i> In the vegetative phase in plants also, all the cells are concentrated in the epidermis or near the surface. Then buds can be produced only if the epidermis has suffered injury.	
Chapter 8. The Abdominal Cavity and its Muscular Wall	53
The sexual organs, the bowels and the urinary organs have muscular walls that contract only involuntarily; fortunately however, they are embedded in a cavity that is provided with voluntary muscles in its wall. Each of the three excretory canals at the lower pole of the body is provided with a double set of occlusory muscles: (1.) the internal involuntary sphincter, and (2.) the involuntary perineal muscle-layer as auxiliary.	
Chapter 9. The Genital Canal.	
a. The female genital canal	57
Anatomy of the female genital canal and its dilatation.	
b. The male genital canal	60
Anatomy of the male genital canal and its prolongation.	
Chapter 10. The lower Portion of the Genital Canal as a Copulatory Organ	64
Origin and anatomy of the spongy or erectile tissue and the mechanism of erection. Ethnographic notes.	
Chapter 11. The Glans and Prepuce	72
Anatomical notes. Mutual adaptation of man and woman.	
Chapter 12. Circumcision	76
Surgical, ethnographical — including the Australian <i>mica</i> operation — and ritual circumcision. Mysticism in its development, from the time of human sacrifice down to the religious sacraments of today. The history of Zippora.	
Chapter 13. The Hygiene of the External Genitals	81
Hygiene of the excretory orifices, and especially of the genital apparatus. Human uncleanness and odours from the animal kingdom. Cleanliness as prophylaxis against venereal infection. Hygienic and ethical cleanliness.	

Part II. The Sexual function.

Physiological Section.

page

Chapter 14. Introduction	89
Close relationship of the sexual function to the intestinal function, and especially to the urinary function. The comparative method alone can give us an explanation.	
Chapter 15. The different Origin of the Three Different Products of Excretion	91
Origin and characters of the contents of the intestine, of the urine, and of man and woman's sexual secretions; historical notes on the discovery of these unicellular organisms.	
Chapter 16. The Intestinal Excretion	98
The mechanism of the intestinal function as a muscular antagonism. Through observation of cause and effect we can succeed in voluntarily controlling the so-called involuntary muscular tissues.	
Chapter 17. The Urinary Secretion	107
The mechanism of the secretion of urine as a muscular antagonism. The stimulation is not caused solely by over-filling, but all kinds of accidental exciting causes may exert their influence. Too great repression of the function most unwise.	
Chapter 18. The Seminal Secretion	112
The reader is recommended to study Chap 17 and 18 together, substituting "semen" for "urine" etc. Description chiefly of the most striking differences e. g.: with the urinary function the alarm is generally given by the uncomfortable local sensations, while in the case of the seminal secretion, congestion is the more marked sensation. General review of the various processes connected with sexual secretion and their periodicity in man and woman.	
Chapter 19. Impure?	118
The soiling caused by our sexual secretions should not be allowed to drive us to immorality, but on the contrary should stimulate us to higher ideals.	
Chapter 20. Congestive Action and Psychic Influences	122
Tremendous resistance accompanies the seminal secretion. The erectile effect of the muscular antagonism in the three different excretory canals is in inverse proportion to their diameter. The psychic element of love is most closely connected with the genital apparatus through certain nerve-paths leading to the brain.	
Chapter 21. The Erection and the Climax	128
Erection, as a function of the occlusory muscles, constitutes a hindrance; but it is a massage-motive, through which at the climax, the over-stimulation at the moment of the reflex orgasm determines the secretory function.	

	page
Chapter 22. The Secretary Function in Woman	133
Contraction of the uterus at the climax of the pleasure. The Spanish method. The Karezza method. The graph of sexual excitement in woman is quite different to that of man, because the excretory system of the primordial kidney is so different in the two sexes. Compare the temperamental and economical differences between man and woman.	
Chapter 23. The Purpose of the Sexual Life	137
The historical significance of teleology as a method of investigation. Adequate development in nature, studied adaptation of our human sexual organization.	
Chapter 24. Derivants and Blood-letting	141
The physiological stimulation of the sexual life is far more wholesome and effective than many of the therapeutic devices of former times. An unsuccessful example from my own practice.	
Chapter 25. The Biological Significance of the Massage	144
The fundamental importance of massage in the formation and nutrition of the tissues. Sexual passion stimulates all our movements and the flow of lymph; even in pregnancy.	
Chapter 26. Increased Vital Energy	150
Sexual passion stimulates the processes of oxidation in our circulation, and causes congestion — see Chap. 55 —, while only the temperature of our internal organs remains constant. The increase in our sexual energy is proportional to the secretory resistance.	
Chapter 27. Material Hindrances to Copulation	153
Our need of a partner. Unpractical situation of our sexual organs. Various sorts of narrowing of the entrance to the vagina. Ethnographical notes on this. Not to mention the pains of child-birth. Impotence of the male. N.B. On frigidity in the female see Chap. 57.	
Chapter 28. Social Limitations of the Sexual Life	159
The institution of marriage; but there are many folks who cannot marry. Therefore sexual reform is very necessary. But reckless sexual indulgence can only destroy our ideals. Adults should repeatedly enjoy mutual sexual pleasure and satisfaction in the married state. The first years of the change of life are the most difficult to live through.	
Chapter 29. The Four most Important Categories of Sexual Satisfaction	162
Married felicity is most perfect when there is no undue haste; both partners are operator and patient at one and the same	

time. — Nocturnal emissions as a safety valve during sleep. — Masturbation, its etymology and definition; detailed comparisons between masturbation and involuntary emissions. — Homosexual satisfaction and its calumny.

Part III. Self Control.

Ethical Section.

Chapter 30. Introduction 171

The muscular antagonism is the material substratum of a psychic duel. For we always feel the need of self-control, and it makes the love-life so much the richer. The ideal, especially in this difficult field, consists so conscious government both in the positive and negative sense.

Chapter 31. The Control of the Production of Semen 174

We are still totally unable to control or influence the production of the reproductive cells, and scarcely able to influence the production of the organo-chemical substances concerned either; at the most, only slightly the secretions of the mucous membranes involved, that take part and mix with them. Too much energy has been exhausted in vain repressive measures, instead of in useful experimental researches.

Chapter 32. The Control of our Seminal Secretion 178

Once the semen has been formed, the secretion goes on continuously, voluntarily or involuntarily. All we can do is to avoid all accidental stimuli as far as possible. We should in particular, not increase the erection through an increased antagonism in the evacuation of the intestinal or urinary canal. We should also avoid all symptoms of pressure in the seminal vesicles. Besides these mechanical stimuli there are also chemically stimulating substances in certain food stuffs and beverages; also thermal and mechanical stimulations of the skin, and direct stimuli to the nerves as well. The prototype of this is the sting of an insect.

Chapter 33. The Increase of our Power of Resistance 187

We should learn from childhood to master our reflexes. Then as we grow up, a frugal and active mode of life will help us to control our passions. And as soon as ideal love awakens, we readily sacrifice our sensual pleasures.

Chapter 34. The Control of our Free Will 190

The doctrine of causality and ethics. Just as we fully showed in Chapter 16 in regard to the intestinal secretion, we can control the psychic sphere because we may so easily see cause and effect, and thus may early strive after the good, before the evil has had time to influence us to any extent. Concrete example.

Development of our instinctive will-power from the earliest stage in our lives. The chief and auxiliary motives.

Chapter 35. Suggestion and Hypnosis 198

How one can put oneself to sleep without a hypnotiser, or if desired can go to sleep completely with the exception of one single determination, so that one is then immune from everything else. Some classic examples.

Chapter 36. Sexual Dreams 203

The theory of sleep and dreaming. Great importance of dreams for health and especially for our sexual hygiene and ethics.

Chapter 37. Sexual Teaching 211

An anti-sexual education is most dangerous; some terrible examples. The value of co-education; shocking things sometimes happen between members of the same family; examples of this. Difference in dress in children of the two sexes.

Chapter 38. Sexual Enlightenment 218

Artificial enlightenment has only been rendered necessary by artificial concealment of the truth, without which concealment one finds frequently more real enlightenment. Some episodes and ideas from family and school-life.

Part IV. Biological Section.

Chapter 39. Introduction 225

We obtain a more objective answer to many questions from the history of evolution.

Chapter 40. The First Appearance of the Sexual Modification of Growth

a. The asexual period of evolution 227

Originally growth and reproduction were entirely vegetative, and first of all from unicellular organisms, which only developed into multicellular ones as a result of abundant and luxurious food-supply. But at times a restriction of growth led perforce to a recurrence of the production of unicellular organisms, from atavism; and it was these single cells that we now term reproductive cells.

b. The Sexual Period of Evolution 235

The hermaphrodite sexual life develops into the one separate sex with its distinctive preferences as regards variation, adaptation and improvement. But under the most favorable conditions, the unicellular, sexual generation soon develops again as a multicellular, vegetative generation, and these variations recur alternately. This periodicity is indeed one of the most important factors in evolution: the sexual coalescence of two cells is each time a corrective of the continual vegetative cell-division, and

microscopically considered also, the coalescence of two cell-nuclei is a corrective of the cell-division.

c. Proofs from the Present 245

Even nowadays, on every occasion, we see the sexual phenomenon occur only when the vegetative growth becomes hindered or too repressed, and yet there is too much reserve energy in activity for growth completely to die out. Innumerable examples. — Both phases may be encouraged by different, and frequently antagonistic conditions. The better we are acquainted with these conditions, the better we can bring to their full development both phases not only in plants and animals, but also in man.

Appendix: Conclusion: this scheme of evolution also greatly modifies our conception of Nature.

Chapter 41. The Evolution of the Parts of the Brain and of the Sexual Organs from equivalent Segments 254

Both sets of organs are of equal value. A series of morphological observations are introduced to enable us the better to appreciate both poles of the body. In plants and also in many species of worms the linear type of growth with an unlimited number of segments is the rule; but on the contrary in the higher animals, since the vegetative form of reproduction has been entirely superseded by sexual reproduction in the egg-form, the shape of body rounded upon itself, with its central organs of control has predominated. At the same time, the segmentation of the spinal column still remains as a reminiscence (according to Haeckel's teaching) of the earlier segmented types. — The great significance of the lower-or hinder-pole of the body. Idem of the upper-or front-pole of the body. The one must counter-balance the other.

Chapter 42. The Evolution of Sexual Feeling 266

The organs of our senses, and of our sexual feeling also, are local refinements of the sensitiveness of our skin. And no matter how greatly our sexual feeling may gradually come to the fore, the general longing for companionship and affection always remains the chief thing. And these things are, in wedded life, associated with our most lofty ideals.

Chapter 43. From Cold-blooded to Warm-blooded 273

It is only as we ascend the scale of evolution and come to the warm-blooded animals that we find the male and female living together or caring for their young.

Chapter 44. From a Brief Rutting Period to a Permanent Sexual Life 277

The rutting periods of animals. Reminiscences of the periodical festivals of promiscuity among primitive races. Now however we are sexually inclined and capable at all times. Our upright carriage.

	page
<i>Chapter 45. From Group-relations to Private Affairs</i>	281
The procreation in common of fishes, frogs, etc. Group-relations in matriarchy. Origin, conduct and decline of matriarchy.	
<i>Chapter 46. From being the husband's slave, woman becomes his companion</i>	285
Stealing the bride becomes later modified into marriage with patriarchal rule. Through the whole of historical times we see that men have done their best systematically to eliminate the memory of the matriarchy, and often to suppress it by cruel and violent means. Yet love has often won the victory.	
<i>Chapter 47. Love and Courtship</i>	289
Among the lower animals (and formerly among men) it is always the male that has had to make himself attractive to the opposite sex; now however, since woman was made to work under the male slaves, and great fecundity is no longer desired, the young woman must ornament her person and exert her charms, only too frequently in vain.	
<i>Chapter 48. From Paradise Lost to Conscious Motherhood</i>	292
Nowadays woman has it in her power to limit her fecundity, with the consequence that she is held in higher honour.	
<i>Chapter 49. Our Higher Differentiation</i>	294
As we learn from the study of ethnology man only came at a relatively late epoch to the consciousness of the connection between the procreative act and pregnancy, and this has been investigated microscopically only in modern times. Now it is possible for us to control each phase of the love-life at will, and they can be valued more perfectly and more ethically.	
<i>Chapter 50. Sexual Pride and Sexual Rivalry</i>	299
Among the lower animals the male is often very small; but in the higher species where he performs the act as the domineering partner, the male is generally the more powerful. From Professor Mendel's tables of heredity, we learn definitely that male and female parent are of equal worth and importance. Nor do the secondary sexual characteristics indicate a superiority of either of the sexes over the other. The best solution of the problem is honest competition with good comradeship between the sexes.	

Part V. Psychological Section.

The Love Life.

<i>Chapter 51. Introduction</i>	305
Now we come to the psychic obverse of the foregoing processes. Both sides can advantageously be studied only in connection with each other.	

	page
<i>Chapter 52. Childhood</i>	308
<p>The child is educated for its sexual future by what it sees and hears of our own sexuality in our family life and social life; if this is not carried too far. Childish coquetry. Masturbation amongst children.</p>	
<i>Chapter 53. Love in Childhood Days</i>	313
<p>Origin of the association of the affective with the sexual life, even where all direct observation of the sexual life is kept from the children. Maternal origin of unselfishness, especially of sexual affection. Comparison between maternal and sexual love. This supplies the solution to many problems, including that of the ancient Greek idealistic homosexual love.</p>	
<i>Chapter 54. Sexual Tenderness</i>	320
<p>The approach of the two sexes becomes more intimate. The more gentle the touch of the loved one, the greater is the effect produced; it is a refinement of massage. Transformation of spiritual love into conscious sexual desire.</p>	
<i>Chapter 55. The First Awakening of Sexual Passion</i>	325
<p>Turgidity in the tissues of plants, expansion in the lower orders of animals, increased blood-pressure in the higher species. The appearance of the first erection. After the uninteresting time of the calf-years, as the sexual urge makes itself gradually felt, manhood awakes with all its energy. The graph of our power of erection varies from day to day and has the wholesome effect of an ebb and flow. At this time of life the sexual stimulation is the motive of all our pleasure, while nocturnal emissions are felt to be the sorest disappointment. The melancholy of the years of puberty.</p>	
<i>Chapter 56. The Summit of our Life-energy</i>	334
<p>At the prime of life we always feel this ever-increasing urge to be something too painful. At this period the motive that actuates our sensuality is the removal or assuaging of the troublesome tension; nocturnal emissions during our sleep indeed bring some relief, but how great must our need of sexual satisfaction have become. Masturbation is then too childish for us, too silly. The fight that we have to put up with ourselves is the effort to find the best solution of this problem.</p>	
<i>Chapter 57. Harmonious Satisfaction and its Psychic Hindrances . .</i>	337
<p>Many disappointments. Undue haste. Karezza. Frigidity of the wife; inverted coitus in the case of husband's impotence. Erogenous and erofugal zones in the epidermis. Personal differences in temperament, moods, etc. Marriage should always have a soothing effect. With approaching age we again reach a period of transition as in youth, in which sexual abstinence has an exciting effect, but coitus is found depressing.</p>	

<i>Chapter 58. Different Degrees of Sexuality</i>	345
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Degrees of permissibility of sexual behaviour. It is so extremely easy to misunderstand little shades of difference in temperament, the result of which is countless cases of disappointment.

<i>Chapter 59. Hetero-, Homo- and Ambi-sexuality</i>	348
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In contrast to the material preference that some people have for the homosexual form of copulation, there is the uranian idea, a form of psychic idealism. Intolerance of the layman and the legislator for this sort of thing. Cruelty Carpenter's opinion of the unselfishness of homosexuality. Homo- and hetero-sexuality are both prejudiced; the higher view point of ambisexuality. Doctrine of the intermediate type between man and woman. We are perhaps all of us intermediates.

<i>Chapter 60. Onset of Old-age</i>	355
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Loss of sensibility, first of our memory, then of our sensory organs, and finally we encounter failure in attempts at coitus. One is not old simply because he can no longer have children, (this happens in woman at a comparatively early age) but only if he is no longer capable of sexual intercourse. It is a warning of Nature that we should rest, and we must obey this warning without grumbling. — After the second transitory period to which we have above, referred we find ourselves in our second childhood, where we are asexual and are no longer troubled by erections

<i>Chapter 61. Senile Decay</i>	361
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One accepts impotence with resignation; one should not however on that account attempt to enforce or expect sexual abstinence in young couples in the prime of life. And the female organism is also forced to rest as far as sexuality is concerned. The intestinal function also suffers. The three typical plagues of old age are: reduced sensibility, diminished capacity for sustained muscular effort, and generally weakened powers of resistance. And gradually the end of one's life approaches almost unnoticed.

<i>Chapter 62. The Graph of Life</i>	366
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The tracing of the life-graph is ruled by the graph of sexuality: the stages of the child, the adult and the old man, with the two intermediate or transitory periods. Indiosyncrasies. Each of the life-periods should be judged ethically and diagnostically in a different manner, from varying view points. The triad: masturbation, sexual intercourse and impotence, are typical, both for each sexual act and for our whole life-history.

Part VI. Deformities of the Sexual Life.

Pathological Section.

<i>Chapter 63. Introduction</i>	371
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That we frequently find no pleasure in our sexual life, arises from

the fact that it is almost always repressed or mutilated. And the chief cause of this wilful repression is the doctrine of dualism held by our modern authorities. In this section we shall endeavour to set before you a diagnosis of the evil, in the hope of remedying it.

Chapter 64. Excess 375

Preachers thunder from the pulpit that we should avoid excess, instead of helping us to find the optimum. A regular and reasonable amount of honestly permitted sexual enjoyment makes us happy and does not exhaust us.

Chapter 65. Miserable Substitutes 379

First and foremost come masturbation; this however, should be differently judged according to the different periods of our lives at which it is practised. Two modes of treatment. The remedy is worse than the disease, when this consists in holding up the torments of hell before our eyes. Observations concerning witches and the Walpurgis Night. — The use of preventives in coitus have nothing to do with the case. — Nor is the case improved if a person, although not homosexually inclined, tries to make the best of his lot by homosexual affection. — Unfortunately our present institution of marriage falls far short of the ideal that loving hearts long for. Sexual reform. Love in secret. Our official monogamy. Loss of a partner. The suffering, melancholy and prostitution of widows and widowers. Suttee. Finally we have prostitution; this mockery of love is the antithesis of wedded bliss. Historical observations on prostitution. The rising generation longs for the pleasures of love, not dirt, which only degrades both partners. The concentration of sexual intercourse on certain individuals increases the danger of infection.

Chapter 66. Sexual Abstinence 399

Is sexual abstinence frequently prejudicial to health? Cases from my own practice, one of which was experimental. It is not only dangerous from the viewpoint of hygiene, but also ethically. People may suffer from sexual abstinence even when no sexual longings have yet been felt; perhaps this is a symptom of intoxication. Experience does not show that childlessness is injurious to the health.

Chapter 67. Sublimation 413

Explanation of the term, borrowed from chemistry. Sufferers from sexual abstinence may find some consolation in mysticism etc., but sane art and literature only suffer thereby. The sombre dualism of the middle ages: the body versus the soul!

Chapter 68. Depravity 417

Perversion, or deviation from the sexual norm was formerly looked upon as something punishable; but later as a pathological manifesta-

tion, and now is regarded as an idiosyncrasy, in many cases occasioned by some reminiscence of childhood. Yet sexual perversion may rather be an accidental symptom of insanity. Sterilisation of sufferers from hereditary perversions, without castrating them, is so far obligatory only in some of the United States of North America; but is optional in hospitals and mental institutions everywhere.

Chapter 69. Modesty, or the Feeling of Shame 422

Blushing as much from an unusual situation as from any sense of being in fault. Neither is solid ground on which to build an ethical training. Ethnographical and historical observations on its evolution, the various stages: from the paralysis of fear, through shame from culpability, and shame from an unusual situation down to false modesty; thus man has developed from motives of blind fear to motives of reason. Numerous examples. The shame of appearing totally naked is also included in this evolutionary tendency. Individuals show the same evolutionary changes of feeling as communities and races. The cheeks that glow from the enthusiasm of lofty ideals are more lively than those red from shame.

Chapter 70. Conclusion. The Sunshine of our Lives 432

Now that we have dealt with the diagnosis of the Sexual Life when it has been cruelly maimed, we conclude this work with a retrospect, with the Ideal of the Love Life before our eyes.

